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PRODUCTION DEPT.
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EAST POPLAR UNIT WELL NO. 100

ROOSEVELT COUNTY, MONTANA

MURPHY CORPORATION - OPERATOR

PRODUCTION DEPT.
FILE COPY

WELL HISTORY

EAST POPLAR UNIT WELL NO. 100

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ROOSEVELT COUNTY, MONTANA

MURPHY CORPORATION - OPERATOR

SUMMARY OF WELL HISTORY

WELL NAME AND NUMBER:	East Poplar Unit Well No. 100
LOCATION:	SW SE Section 11, T28N, R[illegible]E
DRILLING UNIT:	160 Acres
WORKING INTEREST:	31.448470%
REVENUE INTEREST:	31.448470%
ELEVATION:	2203' Ground, 2215' K. B.
WELL HEAD MARKER:	RKB to Top of flange on 9 5/8" x 5 1/2" Cameron Casing Head = 10'.
DRILLING CONTRACTOR:	Zach Brooks Drilling Company
SPUDDED:	3:00 P. M., June 29, 1957
DRILLING RIG RELEASED:	6:00 P. M., July 20, 1957
COMPLETION CONTRACTOR:	Western Oil Well Service Company
COMPLETED:	July 23, 1957
TOTAL DEPTH:	5926' Schlumberger = 5925' Driller
CASING:	9 5/8" @ 1036.32 with 400 sacks cement 5 1/2" @ 5925 with 300 sacks cement
INITIAL PRODUCTION INTERVAL:	Perforated B Zone = 5805' to 5817' with Lane Wells Karat-Free Casing Jet Gun, 4 holes per foot.
TUBING:	2 3/8" and 2 7/8" at 5802.28' (L.W.)
INITIAL POTENTIAL:	Pumped 700 BFPD, 88% Water, (84 BOPD, 616 BWPD).
INITIAL ACID TREATMENT:	B- Zone 5805-5817' with 1000 gallons Dowell etching acid.
INITIAL FRAC TREATMENT:	None
PERFORATIONS:	5805-5817' B Zone

SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

East Poplar Unit K Battery and Wells EPU Nos. 20, 24, & 100

The East Poplar Unit K Battery and the wells producing into the battery, EPU Nos. 20, 24, & 100, are onshore production facilities located in Roosevelt County, Montana, in the East Poplar Unit Oil Field. The field is about 6 miles Northeast of Poplar, Montana, in Townships 28 and 29 North and Ranges 50 and 51 East.

The operator of the East Poplar Unit K Lease is Murphy Oil Corporation located at P. O. Box 547, Poplar, Montana 59255. The corporate headquarters are at 200 Jefferson Avenue, El Dorado, Arkansas, 71730.

The battery consists of a 8' x 27' vertical separator, a circulating pump with appropriate lines, and two 1,000 barrel galvanized bolted tanks. The tanks are vented to the atmosphere and have unrestricted 4" overflow lines between tanks. An earthen pit of about 12,000 barrels capacity is located at the tank battery into which the separator or tanks may be emptied if needed for fluid storage.

The EPU No. 24 is a flowing well. The EPU Nos. 20 and 100 are pumping wells. There are 4' x 4' x 2' cellars at each wellhead with overflow lines to earthen pits capable of holding a full days fluid production in case of a leak at the well site.

The field flow lines and the well casing of each well are cathodically protected. The equipment is in excellent operating condition and there is no reasonable likelihood of a discharge or spill event.

The facilities are about 3 miles from Poplar River. The terrain dips gently East. The soil is sandy and the fields are under cultivation. Because of the distance to the river, the type of soil, and the terrain the 12,000 barrel pit at the tank battery and the well cellars and overflow pits are sufficient secondary containment for these facilities.

SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

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The operator of the East Poplar Unit K Lease is Murphy Oil Corporation located at P.O. Box 547, Poplar, Montana 59255. The corporation headquarters are at 200 Jefferson Avenue, El Dorado, Arkansas 71730.

The foreman, Mr. Gerald Hagadone, is responsible for oil spill prevention at this facility. On each trip to the lease the pumper makes a visual inspection of all facilities and reports any malfunction to the foreman, Mr. Gerald Hagadone, and notes this malfunction on the ten day gauge report. There has been no reportable oil Spill Event during the twelve months prior to January 10, 1974.

The equipment is in excellent operating condition and there is no reasonable likelihood of a discharge or spill event.

The field flow lines and the well casing of each well are cathodically protected.

Personnel are properly instructed in the operation and maintenance of equipment to prevent oil discharges, and applicable pollution control laws, rules and regulations. Each employee is given these instructions by the field foreman when they are employed. Scheduled prevention briefings for the operating personnel are conducted frequently enough to assure adequate understanding of the SPCC Plan. The procedures are reviewed every six months by the field foreman with each employee. When changes occur in procedures, each employee is informed.

Fluid in the 12,000 barrel storage pit is pumped to the salt water disposal unit if the water is brackish as determined by chloride tests. If only fresh water is contained in the pit it is disposed of by placing on lease roads to control dust and compact the roads. Any oil in the pit is pumped back through the separator with the water being sent to the disposal well. Oil skims are burned by state permits. There are no outlets from the storage pit and all fluids must be pumped out.

The two 1,000 barrel tanks are galvanized and are bolted construction. The tanks are vented to the atmosphere and have unrestricted 4" overflow lines between tanks.

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tank battery and the well cellars and overflow pits are sufficient secondary containment for these facilities.

The tanks are observed daily by the pumper. Periodically, the foreman checks the entire tank battery and producing wells closely. If any trouble is suspected, the facility is shut down, the tanks and/or separator are emptied and cleaned. The facility is then thoroughly inspected by service company personnel, repairs are made if needed and the unit is placed back into service.

Produced salt water is pumped to a field gathering system for injection into a salt water disposal well. The above ground facilities are observed daily by the pumper and inspected by the foreman closely on his visits to the lease.

All salt water disposal flowlines are cement asbestos lines. These lines are buried and the surface is observed daily by the pumper.

MANAGEMENT APPROVAL

This SPCC Plan will be implemented as herein described.

Signature _____

Name _____

Title _____

CERTIFICATION

I hereby certify that I have examined the facility, and being familiar with the provisions of 40 CFR, Part 112, attest that this SPCC Plan has been prepared in accordance with good engineering practices.

_____
Printed Name Of Registered Professional Engineer

_____
Signature Of Registered Professional Engineer

(Seal)

Date_____ Registration No. _____ State_____

Contingency Plans For An Oil Discharge

East Poplar Unit K Battery and Wells EPU Nos. 20, 24, & 100

The field is visited twice daily by the pumper. Visual inspection is made on each facility on each visit to determine if any malfunction is occuring. The most likely potential oil discharges are checked thoroughly. Periodically, the field foreman, Mr. Gerald Hagadone, will conduct a close check of the entire facility.

The pumpers, Mr. Ferdinand Charette and Mr. Robert Atkinson, have been instructed in the operations and maintenance of equipment to prevent oil and water discharges and informed of the applicable pollution control laws, rules and regulations. If an oil discharge occurs, the pumper will immediately close the proper valves and/or shut down the production facility to stop the discharge. He will then call Mr. Gerald Hagadone who will in turn inform Mr. Bill Brown, District Superintendent. If needed, the proper state and federal agencies will be notified by Mr. Brown. The discharged oil will be reclaimed or disposed of by approved engineering procedures and in accordance to law.

In the event discharged oil collects on standing water such as a stock pond or rain water standing in a low spot, the oil will be pumped into a tank truck. The skim of oil left on the water will be removed by an oil skimmer owned by Murphy Oil Corporation. The skimmer can be towed to the field within an hours time.

If the discharge is in excess of 50 barrels of oil, the Montana Department of Health and Environmental Sciences in Helena will be notified by Mr. Brown.

If a Spill Event occurs as defined by federal law, the Environmental Protection Agency in Denver, Colorado will be notified by Mr. Brown.

A.F.E. No. 8-4007

AUTHORITY FOR EXPENDITURE
MURPHY CORPORATION - EAST POPLAR UNIT NO. 100
SW SE Section 11-T28N-R51E, Roosevelt County, Montana

WELL DRILLING & CONSTRUCTION EXPENSE:	TO CSG. PT.	COMP. & EQUIP.	TOTAL COST
Drilling - Footage - 5950' @ $5.25/ft.	$ 31,250		$ 31,250
Daywork - 4 days @ $850/day &	3,400		3,400
2 days @ $775/day		$ 1,550	1,550
Loc. survey, permit & prep.	500		500
Roads, fences, cattleguard, etc.	500		500
Mud mat. & chem., incl. oil & gas	3,500		3,500
Drilling bits, baskets, etc.		250	250
Cementing casing	1,550	1,150	2,700
Coring materials & services	600		600
Testing services, incl. swabbing	1,600		1,600
Other logs, surveys, & analysis	1,600	800	2,400
Perforating services		600	600
Hydrafrac, acidize, etc., incl. oil		1,400	1,400
Float equip., centralizers, etc.	300	600	900
Trucking, welding & other labor	250	500	750
Supervision & miscellaneous	250	500	750
Total Est. Well Drlg. & Const. Exp.	$ 45,300	$ 7,350	$ 52,650
WELL EQUIPMENT COSTS:			
Casing: 1000' of 9-5/8" O.D.	$ 4,000		$ 4,000
Casing: 5950' of 5-1/2" O.D.		$ 10,950	10,950
Tubing: 5950' of 2-7/8" O.D.		5,300	5,300
Casing head & connections	300		300
Xmas tree & connections		800	800
Total Est. Well Equip. Costs	$ 4,300	$ 17,050	$ 21,350
Total Est. Cost of Well	$ 49,600	$ 24,400	$ 75,000
LEASE EQUIPMENT:			
Flow lines		$ 2,000	$ 2,000
Other line pipe, valves, & fittings		500	500
Trucking, welding, & other labor		500	500
Total Est. Cost of Lease Equip.		$ 3,000	$ 3,000
TOTAL EST. COST OF WELL & LEASE EQUIP.	$ 49,600	$ 27,400	$ 77,000

APPORTIONMENT OF TOTAL ESTIMATED COSTS

Murphy Corporation	31.448470%	$ 15,598	$ 8,617	$ 24,215
Muncco Company	2.096565%	1,040	574	1,614
Placid Oil Company	33.545035%	16,638	9,191	25,830
The Carter Oil Company	16.335860%	8,103	4,476	12,579
Phillips Petroleum Company	16.335860%	8,103	4,476	12,579
C. F. Lundgren	.238210%	118	65	183

APPROVAL OF EXPENDITURE

Requested by:

Harold Miller JUN 10 1957
Division Production Supt. Date

Recommend Approval:

Gordon Kirby JUN 12 1957
Division Manager Date

Recommend Approval:

Staff Production Man Date

Recommend Approval:

Budget Supervisor Date

Approved:

Vice President-Operations Date

BM:eh
6-7-57

Fillet #130

A.F.E. No. 8-5013 Poplar

AUTHORITY FOR EXPENDITURE
MURPHY CORPORATION - EAST POPLAR UNIT NO. 100
SW SE Section 11, T28N, R51E, Roosevelt County, Montana
(Installation of Pumping Unit)

Pumping unit complete with engine	$5,650
Labor and materials setting unit (complete)	950
Trucking, small fittings, dirt work, and incidentals	300
Rods, pump and well head equipment	3,000
Total Estimated Cost	$9,900

This well is in a low pressure area and will require pumping as soon as it is completed.

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Corporation	31.448470 %	$3,113
Munoco Company	2.096565 %	208
Placid Oil Company	33.545035 %	3,321
Carter Oil Company	16.335860 %	1,617
Phillips Petroleum Company	16.335860 %	1,617
C. F. Lundgren	.238210 %	24

APPROVAL OF EXPENDITURE

Requested by: MTJ 6-20-57
Date

Harold D. Miles JUN 24 1957
Division Production Supt. Date

Recommend Approval:
Gordon Kirby JUN 24 1957
Division Manager Date

Recommend Approval:

Staff Production Man Date

Recommend Approval:

Budget Supervisor Date

Approved:

Vice President-Operations Date

MTJ:br
6-20-57

Mailed to 6 [illegible] 6-24-57

A.F.E. #9-5036

AUTHORITY FOR EXPENDITURE
MURPHY CORPORATION - EAST POPLAR UNIT NO. 100
SW SE Section 11, T28N, R51E, Roosevelt County, Montana
(Workover #1)

Pulling Unit 4 (9 hr.) days @ $225 per day	$ 900
Perforate "B-1" Zone (8')	450
1000 gallons acid and service	700
DR Latching plug and Tubing Anker	600
Miscellaneous labor and trucking	300
Total Estimated Cost	$2,950

Present Status: Pumping from the "B-4" Zone perforations 5805-5817'. Tested November 1, 1958 at 624 BFPD, 92% water (50 BOPD, 574 BWPD).

History: Completed June 23, 1957 in the "B-4" Zone perforations 5805-5817'. Initial Potential was 700 BFPD, 88% water (84 BOPD, 616 BWPD). Accumulated Net Production through October, 1958 is 2,604 BO and 223,348 BW.

Justification for Zone Change: To increase production and lower water cut.

Proposed Workover: Perforate the "B-1" Zone 5742-5750' (G & N Log), test for communication outside of casing between "B-4" and "B-1" Zone perforations (before and after acidizing). Acidize "B-1" Zone with 1000 gallons regular acid, swab test, blank off "B-4" Zone perforations with DR latching plug latched into packer at 5800', pump test.

The use of the Model "D" production packer at 5800' and DR latching plug will eliminate squeezing the "B-4" Zone. The "B-4" Zone can be opened without perforating and strip dwon to economical limits after the "B-1" Zone is depleted.

Structurally:	E.P.U. #100	E.P.U. #5
"B-1" Zone	-3528	-3541 (B1 & 27)
Water Cut		22%

E.P.U. #5 is probably producing from only the "B-1" Zone after DOC squeeze?

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Corporation	31.448470%	$ 928
Munoco Company	2.096565%	62
Placid Oil Company	33.545035%	990
Carter Oil Company	16.335860%	482
Phillips Petroleum Company	16.335860%	482
C. F. Lundgren	.238210%	6

APPROVAL OF EXPENDITURE

Requested by: MTJ 11-25-58 Date

Recommend Approval:

Harold Miller 11-28-58
Division Production Supt. Date

Staff Production Man Date

Recommend Approval:

R L Brack 11/28/58
Division Manager Date

Budget Supervisor Date

Approved:

Vice President-Operations Date

Approved by E L Dowdle
12-10-58

MTJ:mm
11-25-58

A.F.E. 1-1559

AUTHORITY FOR EXPENDITURE
MURPHY CORPORATION - EAST POPLAR UNIT NO.100
SW SE Section 11, T28N, R51E, Roosevelt County, Montana

Pulling Unit (8 hrs. @ $28.00 per hr.)	$ 225
1000' - 7/8" scraper rods, Cond. 1 @ $0.92 per foot	925
1825' - 7/8" plain rods, Cond. 1 @ $0.70 per foot	1,275
2825' - 3/4" plain rods, Cond. 1 @ $0.55 per foot	1,550
Miscellaneous Labor, Trucking and Material	150
TOTAL ESTIMATED COST	$4,125

Justification for Expenditure: E.P.U. Well No. 100 has had a high occurrence of rod breaking during recent months resulting in extra well service costs. A.F.E. No. 1-1559 is to cover the cost of laying down and replacing with new rods. Old rods to be magnufluxed.

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Corporation	31.448470%	$1,297
Sunoco Company	2.096565%	86
Placid Oil Company	33.545035%	1,384
Humble Oil & Refining	16.335860%	674
Phillips Petroleum Co.	16.335860%	674
C. F. Lundgren	.238210%	10

APPROVAL OF EXPENDITURE

Requested by: M. J. Jones, Field Production Supt. — 3-1-61 Date

Recommend Approval:

Division Production Supt. — Date

Recommend Approval:

Staff Production Man — Date

Recommend Approval:

Division Manager — Date

Recommend Approval:

Budget Supervisor — Date

APPROVED:

Vice President - Operations — Date

MTJ:pm
3-1-61

A.F.E. 1-1559

AUTHORITY FOR EXPENDITURE
MURPHY CORPORATION - EAST POPLAR UNIT NO. 100
SW SE Section 11, T28N, R51E, Roosevelt County, Montana

Supplemant No. 1

3 (8 hr.) days pulling unit time @ $28 per hr.	$650
	$650

Supplemant to A.F.E. No. 1-1559 is to cover the additional pulling unit time required in replacing rod string.

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Corporation	31.448470%	$204
Mmoco Company	2.096565%	14
Placid Oil Company	33.545035%	218
Humble Oil & Refining	16.335860%	106
Drilling Specialties	16.335860%	106
C. F. Lundgren	.238210%	2

APPROVAL OF EXPENDITURE

Requested by: M H Jones — 7-17-61
Field Production Superintendent — Date

RECOMMEND APPROVAL:

Division Production Supt. — Date

RECOMMEND APPROVAL:

Staff Production Man — Date

RECOMMEND APPROVAL:

Division Manager — Date

RECOMMEND APPROVAL:

Budget Supervisor — Date

APPROVED:

Vice President - Operations — Date

MTJ:pm
7-17-61

M. T. James copy

A.F.E. NO. 3-1517

AUTHORITY FOR EXPENDITURE
MURPHY CORPORATION - EAST POPLAR UNIT NO. 100
SW SE Section 11, T28N, R51E, Roosevelt County, Montana

(Confirming)

JUSTIFICATION:

EPU #100 confirming emergency AFE No. 3-1517 to locate and repair casing leak at 3937' with HOWCO with 10' of stress casing patch set from 3932' to 3942'.

ESTIMATED COST

Pulling unit 34 hrs. at $30 per hour	$1,025
Casing patch and pump truck to set same	$1,300
Misc. trucking, labor and material	$ 600
TOTAL ESTIMATED COST	$2,925

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Corporation	31.448470%	$ 920
Manoco Company	2.096565%	$ 61
Placid Oil Company	33.545035%	$ 981
Humble Oil & Refining Company	16.335860%	$ 478
Phillips Petroleum Company	16.335860%	$ 478
C. F. Lundgren	.238210%	$ 7

APPROVAL OF EXPENDITURE

Requested By: M. T. James — 7-8-63 Date — Recommend Approval:

L. L. Duncan — 7-15-63 Date — W. J. Thornton — 7-18-63 Date

APPROVED:

Manager - E. & E. — 7/18/63 Date

MTJ/bab
7-8-63

File #100

MT James approved copy BKJ

A.F.E. NO. 3-1517-S1 partners have approved

AUTHORITY FOR EXPENDITURE
MURPHY CORPORATION - EAST POPLAR UNIT NO. 100
SW SE Section 11, T28N, R51E, Roosevelt County, Montana

(Supplement #1)

JUSTIFICATION:

Supplement #1 to AFE #3-1517 is to cover the additional cost to swedge out stressed liner that collasped and squeeze with cement.

TOTAL ADDITIONAL COST

Pulling unit 104 hrs. at $30 per hour	$3,125
Cement truck, packers and service	$3,000
Cement	$ 300
Homco tools to swedge liner	$ 950
Misc. labor, trucking and materials	$ 650
TOTAL ESTIMATED COST	$8,025

APPORTIONMENT OF TOTAL ADDITIONAL COST

Murphy Corporation	31.448470%	$2,524
Munoco Company	2.096565%	$ 168
Placid Oil Company	33.545035%	$2,692
Humble Oil & Refining Company	16.335860%	$1,311
Phillips Petroleum Company	16.335860%	$1,311
C. F. Lundgren	.238210%	$ 19

APPROVAL OF EXPENDITURE

Requested By: M. T. James — 7-23-63 Date

Recommend Approval:

L. L. Duncan — 7-30-63 Date

W. J. Thornton — 8-1-63 Date

APPROVED:

Manager - P. & E. — 8/1/63 Date

MTJ/bab
7-23-63

A.F.E. No. 7-1515

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 100
SW SE Section 11, T28N, R51E, Roosevelt County, Montana
(Change Tubing and Rods)

PRESENT STATUS: Pumping from the B-1 Zone. Well Test 4-1-67 72 BFPD 38% Water 45 BOPD 27 BWPD 12 SPM X 44" stroke X 1-1/4" bore pump. Pump efficiency 106% 2-3/8" and 2-7/8" tubing and 3/4" & 7/8" rods. Pump depth 5593'.

TUBING RECORD

Date	Dia-log	Hydro-test	Tbg. Leak	Jts. Add	Ft.	M/R	Est. Cost
1-13-66	Yes		Yes	71	2201'		$1,896.00
8-19-66	Yes		Yes	9	279'	7	$1,424.00
9- 8-66	No	Yes	4400'	1	31'	1	$1,165.00
3- 3-67	No	Yes	No			6	$1,562.00
4-12-67	No	No	4800'	1	31'	1	$ 947.00
	2	2	4	82	2542	3.5 Avg.	$6,994.00

PROPOSAL: , Change complete tubing string to 2-3/8", Class No. 2, tuboscoped tubing. Lay down 7/8" rods. (Pay out including production 2.5 tubing jobs).

ESTIMATED COST

Pulling Unit, 20 hrs. at $33.00 per hr.	$ 675.00
5600' 2-3/8", 4.70#, J-55, E.U.E., Tubing Class No. 1 at $0.71	$ 3,975.00
3350' (60%) of 5/8" S-67 Sucker Rods Class No. 1 at $0.38	$ 1,275.00
Cost to Tuboscope 182 jts. Tubing at $2.95 per jt.	$ 525.00
Less Credit for Estimated 30% Class No. 2 2-3/8" and 2-7/8" Tbg.	($ 1,125.00)
Less Credit for Estimated 30% Class No. 3 2-3/8" and 2-7/8" Tbg.	($ 750.00)
Less Credit for Estimated 40% Class No. 4 2-3/8" and 2-7/8" Tbg.	($ 225.00)
Less Credit for Estimated 65% Class No. 2 7/8" and 3/4" Rods	($ 1,150.00)
Misc. Labor, Trucking and Rod Guides	$ 500.00
Total Estimated (Net) Cost	$ 3,700.00

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	$ 1,164.00
Munoco Company	2.096565%	$ 78.00
Placid Oil Company	33.545035%	% 1,241.00
Humble Oil and Refining Co.	16.335860%	$ 604.00
Drilling Specialties	16.335860%	$ 604.00
C. F. Lundgren	.238210%	$ 9.00

APPROVAL OF EXPENDITURE

Requested by: APPORVED:

M. T. James — 4-28-67 Date

W. J. Thornton — 5-2-67 Date

L. L. Duncan — 5/3/67 Date

MTJ/sb
April 28, 1967

A.F.E. NO. 3-1507-10

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 100
SW SE Section 11, T28N, R51E, Roosevelt County, Montana
(Acidize Well)

PROPOSAL AND JUSTIFICATION: It is proposed to acidize this well with 2000 gallons of retarded 28% HCL and overflush with 50 bbls. of lease crude.

There is a HOWCO casing patch from 3932-3942' which leaked and was squeezed and is now holding but may give up at any time. The patched casing leak is the main reason for trying to deplete this well as soon as it is feasible. This well has two other zones of production, the B-4 which has been produced but was D.R. plugged in January, 1959 to open the B-1 Zone, and the A-Zone. The B-4 was producing at the rate of 624 BFPD 50 BOPD 574 BWPD 92% BS&W when it was shut in while the A-Zone has never been opened. East Poplar Unit No. 100 is producing at the rate of 60 BFPD 29 BOPD 31 BWPD 52% BS&W and this fluid should be able to be doubled and give a 20 BOPD increase. There is always the possibility of opening the casing leak and maybe loosing the hole. Payout for this workover, with no problems, on a 20 BOPD increase would be 60 days.

ESTIMATED COST

Pulling Unit	$ 750
Packer Rental	$ 750
Acid, Pump Truck, Etc.	$ 2,000
Misc. Labor, Material and Trucking	$ 500
Total Estimated Cost	$ 4,000

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	$ 1,258
Placid Oil Company	33.545035%	$ 1,342
Exxon Company, U.S.A.	16.335860%	$ 653
Phillips Petroleum Company	16.335860%	$ 653
Munoco Company	2.096565%	$ 84
C. F. Lundgren	.238210%	$ 10

APPROVAL OF EXPENDITURE

Requested by: W. G. Brown (signature) — W. G. Brown — 2-6-73 Date

Approved by: (signature) — A. W. Simpson — 5/3/73 Date

Gniberson : PK. 3/2.
Johnson :
Baker :

4619

(signature)

WGB/sb
February 6, 1973

The cost on this job exceeded the estimated cost by $619.00, due to hydro-testing tbg. (above the slips) and more pulling unit expense than anticipated. No problems encountered during this job

(initials)

EPU #100

RG.
WGB

A.F.E. No. 3-1507-10-S1

Do not need Supplement when Supplement is for less than $1000. If over $1000 then use 10% over as basis for Supplement - BCD

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 100
SW SE Section 11, T28N, R51E, Roosevelt County, Montana
(Supplement No. 1)

Supplement No. 1 is to cover additional expense incurred while acidizing this well. When the A.F.E. was originally figured the cost of hydro-testing the tubing was not included. Rig cost was also higher than figured due to hydro-testing.

	ESTIMATED COST Original A.F.E.	Supplement No. 1	Total
Pulling Unit	$ 750	$ 608	$ 1,358
Packer Rental	$ 750	($ 182)	$ 568
Acid, Pump Truck, etc.	$ 2,000	$ 164	$ 2,164
Misc. Labor, Material & Trucking	$ 500	($ 321)	$ 179
Hydro-Test	-------	$ 350	$ 350
Total	$ 4,000	$ 618	$ 4,618

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	$ 1,258	$ 194	$ 1,452
Placid Oil Company	33.545035%	$ 1,342	$ 207	$ 1,549
Exxon Company, U.S.A.	16.335860%	$ 653	$ 102	$ 755
Phillips Petroleum Co.	16.335860%	$ 653	$ 102	$ 755
Munoco Company	2.096565%	$ 84	$ 13	$ 97
C. F. Lundgren	.238210%	$ .2[illegible]10[illegible]%	$ 11	$ 1

APPROVAL OF EXPENDITURE

Requested by: Approved by:

W. G. Brown (signature) — Date 6-22-73

W. G. Brown ______ Date ______ A. W. Simpson ______ Date

sb
June 22, 1973

Form No. 2
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

RECEIVED
JUL 11 1957
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	X
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

July 2, 19 57

Following is a {notice of intention to do work / ~~report of work done~~} on land {~~owned~~ / leased} described as follows:

LEASE Federal BLM-A 029305 (lse 6035)

MONTANA (State) Roosevelt (County) East Poplar Unit (Field)

Well No. 100 SW SE (m. sec.) Section 11 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 660 ft. from {~~N~~ / S South} line and 1989 ft. from {E / ~~W~~ East} line of Sec. 11

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2215 feet

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

Spudded 3:00 P.M. 6-29-57 - Ran 32 jts. (1025.32') of 9 5/8" OD, Standc., R-2, 8rd. thd., Class 1 American casing. Landed 11.00' below RKB, Howco float shoe at 1036.32', 1 Howco cent. at 1022', circulated 30 min. before cementing. Cemented with 400 sacks regular cement with 2% CaCl, 10 barrels water ahead of cement. Bumped plug with 1000#, released pressure, held OK. Full circulation while cementing. 50 sacks cement back. Plug down 2:05 A.M., 7-1-57.

Tested BOP and 9 5/8" casing with 1000# for 30 min. Held OK.

RECEIVED
JUL 8 1957
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS

Approved subject to conditions on reverse of form U.S.G.S. approved 7-5-57
Date 7-10-57
By John R. Hoff
Title District Office Agent

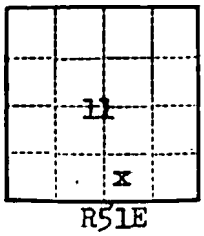
Company Murphy Corporation
By M. F. James
Title Field Production Superintendent
Address Box 147, Poplar, Montana

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

10M--1-56

OVER

Form 9-881a
(Feb. 1951)



U. S. GEOLOGICAL SURVEY
RECEIVED
JAN 12 1959
SILLINGS, MONTANA

(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Budget Bureau No. 42-R358.4.
Approval expires 12-31-60.

Land Office Denver Montana
Lease No. ~~Federal~~ BLM-A
029305-A (lse 6035)
Unit ~~East Poplar Unit~~
Dkt No. 39

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL		SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL		SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE	XX	SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL			

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

January 8, 19 59

Well No. 100 is located 660 ft. from ~~N~~ S line and 1989 ft. from E ~~W~~ line of sec. 11

SW SE Section 11 (¼ Sec. and Sec. No.) | 28N (Twp.) | 51E (Range) | M.P.M. (Meridian)

East Poplar (Field) | Roosevelt (County or Subdivision) | Montana (State or Territory)

The elevation of the derrick floor above sea level is 2215 ft.

COPY RETAINED DISTRICT OFFICE

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

Perforate "B" Zone (5742'-5750'), test for communication outside casing between "B" Zones (before and after acidizing). Acidize "B" Zone with 1000 gallons regular acid, swab test, blank off "B" Zone (5805'-5817') with DR latching plug, pump test.

Approved JAN 12 1959
[signature]
District Engineer

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company Murphy Corporation

Address P. O. Box 547

Poplar, Montana

By [signature]

Title Field Production Supt.

U. S. GOVERNMENT PRINTING OFFICE: 1958 O -463339

Form No. 2
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION

RECEIVED
FEB 5 - 1959
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	
		Workover History	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

January 28, 19 59

Following is a ~~notice of intention to do work~~ report of work done on land ~~xxxxxx~~ leased described as follows:

LEASE Federal BLM-A 029305-A (lse 6035)

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 100 SW SE Section 11 (m. sec.) 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 660 ft. from ~~XXX~~ S line and 1989 ft. from ~~E~~ XXX line of Sec. 11

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2215'

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

SEE ATTACHED SHEETS

RECEIVED
FEB 2 - 1959
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA - BILLINGS

U.S.G.S. approved 2-2-59
Approved subject to conditions on reverse of form

Date 2-4-59

By John Bishop
Title
District Office Agent

Company Murphy Corporation

By M. H. Jones

Title Field Production Superintendent

Address Poplar, Montana

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

10M--1-56

OVER

Form No. 2
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	
Notice to repair indicated csg. leak xx		Repaired casing leak.	xxxx

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

July 5, 1963

Following is a { notice of intention to do work / report of work done } on land { ~~owned~~ / leased } described as follows:

LEASE A-029205A

MONTANA (State) Roosevelt (County) East Poplar Unit (Field)

Well No. 100 SW SE Section 11 (m. sec.) 28N (Township) 51E (Range) MPM (Meridian)

The well is located 660 ft. from { N / S } line and 1989 ft. from { E / W } line of Sec. 11

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2203 Gr.

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

Notice of intention to do work----

To locate and repair indicated casing leak.

Report of work done------

Located and repaired 5½" casing leak at 3937'.with Howco stress casing patch set from 3932'-3942'.
July 4, 1963--pumping, no test.

Approved subject to conditions on reverse of form

Date

By
Title
District Office Agent

Company Murphy Corporation
By ORIGINAL SIGNED BY M. T. JAMES
Title Field Production Superintendent
Address Box 547, Poplar, Montana 59255

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL

OVER

Form 9-331 b
(April 1952)

Budget Bureau No. 42-R359.4.
Approval expires 12-31-60.

(SUBMIT IN TRIPLICATE)

U. S. GEOLOGICAL SURVEY
RECEIVED
JUL 9 1963
BILLINGS, MONTANA

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

[redacted] BLM&A (M)
Lease No. M-029305A

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL		SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO REDRILL OR REPAIR WELL		SUBSEQUENT REPORT OF REDRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL			
Notice to repair indicated csg. lk.	xx	Repaired casing leak.	xxx

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

July 5, 1963

Well No. 100 is located 660 ft. from {S} line and 1989 ft. from {E} line of sec. 11

SW SE Section 11 (¼ Sec. and Sec. No.) | 28N (Twp.) | 51E (Range) | MPM (Meridian)

East Poplar Unit (Field) | Roosevelt (County or Subdivision) | Montana (State or Territory)

The elevation of the derrick floor above sea level is 2203 ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

Notice of intention to do work------

To locate and repair indicated casing leak.

Report of work done----

Located and repaired 5½" casing leak at 3937' with Howco stress casing patch set from 3932'-3942'.
July 4, 1963--Pumping, no test.

Approved JUL 10 1963
(ORIG. SGD.) R. A. SMITH
ACTING District Engineer

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company Murphy Corporation

Address Box 547

Poplar, Montana

By ORIGINAL SIGNED BY M. T. JAMES

Title Field Production Superintendent

U. S. GOVERNMENT PRINTING OFFICE 16—84376-8

Form No. 2
GENERAL RULES
201, 202, 213,
216, 219, 233.

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	
		Repair casing leak	X

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

July 26, 19 63

Following is a { ~~Notice of intention to do work~~ / report of work done } on land { ~~owned~~ / leased } described as follows:

LEASE A-029305A

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 100 SW SE Section 11 28N 51E MPM
(m. sec.) (Township) (Range) (Meridian)

The well is located 660 ft. from { N / S } line and 1989 ft. from { E / W } line of Sec. 11

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2203Gr.

RECEIVED
JUL 29 1963
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA - BILLINGS

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

The work done reported July 5, 1963 was premature. The casing patch collasped and required swedging out and cement squeezing to repair. Squeeze job #1 with 75 sacks, would not squeeze. Squeeze job #2 with 50 sacks, held 5000 PSI for 30 minutes ok.
Put back on production July 18, 1963.
Tested July 24, 1963 at the rate of 79 BFPD, 20% water, (63 BOPD, 16 BWPD).

Approved subject to conditions on reverse of form

Date JUL 29 1963

By ORIGINAL SIGNED BY:
R. M. Watkins, Petr. Engr.
Title
District Office Agent

Company Murphy Corporation

By ORIGINAL SIGNED BY M. T. JAMES

Title Field Production Superintendent

Address Box 547, Poplar, Montana 59255

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL

OVER

Form 9-331 b
(April 1952)

U. S. GEOLOGICAL SURVEY
RECEIVED
JUL 29 1963
BILLINGS, MONTANA

(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Budget Bureau No. 42-R359.4.
Approval expires 12-31-60.

Indian Agency

[illegible] BLM-A (O) -

Lease No. -029305A

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL		SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO REDRILL OR REPAIR WELL		SUBSEQUENT REPORT OF REDRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL			
		Repair casing leak	xx

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

July 26, 1963

Well No. 100 is located 660 ft. from {S} line and 1989 ft. from {E} line of sec. 11

SW SE Section 11 (¼ Sec. and Sec. No.) 28N (Twp.) 51E (Range) MPM (Meridian)

East Poplar (Field) Roosevelt (County or Subdivision) Montana (State or Territory)

The elevation of the derrick floor above sea level is 2202 ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

The work done reported July 5, 1963 was premature. The casing patch collasped and required swedging out and cement squeezing to repair.
Squeeze job #1 with 75 sacks, would not squeeze. Squeeze job #2 with 50 sacks, held 3000 PSI for 30 minutes ok.
Put back on production July 18, 1963.
Tested July 24, 1963 at the rate of 79 BFPD, 20% water, (63 BOPD, 16 BWPD).

Approved AUG 6 1963
(ORIG. SGD.) R. A. SMITH
ACTING District Engineer

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company Murphy Corporation

Address Box 547
Poplar, Montana 59255

By ORIGINAL SIGNED BY M. T. JAMES

Title Field Production Superintendent

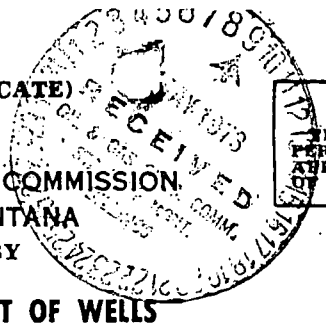
Form No. 2

GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)

TO

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY



NOTICE
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement	X	Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

May 7, 19 73

Following is a {notice of intention to do work} on land {leased} described as follows:

LEASE East Poplar Unit No. 100

MONTANA (State) Roosevelt (County) East Poplar Unit (Field)

Well No. 100 SW SE Section 11 (m. sec.) T28N (Township) R51E (Range) MPM (Meridian)

The well is located 660 ft. from {S} line and 1989 ft. from {E} line of Sec. 11

LOCATE ACCURATELY ON PLAT ON BACK OF THIS FORM THE WELL LOCATION, AND SHOW LEASE BOUNDARY

The elevation of the derrick floor above the sea level is 2203' G.L.

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

It is proposed to acidize this well with 2,000 gallons of retarded 28% HCL acid and overflush with 50 bbls. of lease crude.

This well is pumping at the rate of 60 BFPD 29 BOPD 31 BWPD 52% W.C.. Fluid should be doubled and oil production should be increased by approximately 20 BO

Approved subject to conditions on reverse of form

Date MAY 9 - 1973

By ORIGINAL SIGNED BY: J. R. Hug, Supervisor
District Office Agent — Title

Company Murphy Oil Corporation

By ORIGINAL SIGNED BY T. A. BROWN

Title District Superintendent

Address P.O. Box 547, Poplar, Montana 59255

COMMISSION USE ONLY
API WELL NUMBER
25
STATE COUNTY WELL

NOTE:—Reports on this form to be submitted to the District Agent for Approval in Quadruplicate

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

OVER

Form 9-331
(May 1963)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPLICATE* (Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1424.

5. LEASE DESIGNATION AND SERIAL NO.: FLM-A - 029305A

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: ~~Fort Peck~~

1. OIL WELL [X] GAS WELL [ ] OTHER

7. UNIT AGREEMENT NAME: East Poplar Unit

2. NAME OF OPERATOR: Murphy Oil Corporation

8. FARM OR LEASE NAME: East Poplar Unit

3. ADDRESS OF OPERATOR: P.O. Box 547, Poplar, Montana 59255

9. WELL NO.: No. 100

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface

660' from the South line and 1989' from the East line

10. FIELD AND POOL, OR WILDCAT: East Poplar Unit

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: SW SE Section 11, T28N, R51E

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, RT, GR, etc.): 2203' G.L.

12. COUNTY OR PARISH: Roosevelt

13. STATE: Montana

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF		PULL OR ALTER CASING		WATER SHUT-OFF		REPAIRING WELL	
FRACTURE TREAT		MULTIPLE COMPLETE		FRACTURE TREATMENT		ALTERING CASING	
SHOOT OR ACIDIZE	X	ABANDON*		SHOOTING OR ACIDIZING		ABANDONMENT*	
REPAIR WELL		CHANGE PLANS		(Other)			
(Other)				(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.) *

It is proposed to acidize this well with 2,000 gallons of retarded 28% HCL acid and overflush with 50 bbls. of lease crude.

This well is pumping at the rate of 60 BFPD 29 BOPD 31 BWPD 52% W.C.. Fluid should be doubled and oil production should be increased by approximately 20 BO.

18. I hereby certify that the foregoing is true and correct

SIGNED ORIGINAL SIGNED BY W. G. BROWN District Superintendent DATE May 7, 1973

(This space for Federal or State office use)

APPROVED BY [signature] TITLE _____ DATE 5-14-73

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

Form 9-331
(May 1963)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPLICATE* (Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1424.

5. LEASE DESIGNATION AND SERIAL NO.: BLM A-029305A

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: [redacted]

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)

RECEIVED
MAY 10 1973
Billings, Montana
Geological Survey

1. OIL WELL [X] GAS WELL [ ] OTHER

7. UNIT AGREEMENT NAME: East Poplar Unit

2. NAME OF OPERATOR: Murphy Oil Corporation

8. FARM OR LEASE NAME: East Poplar Unit

3. ADDRESS OF OPERATOR: P.O. Box 547, Poplar, Montana 59255

9. WELL NO.: No. 100

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface

660' from the South line and 1989' from the East line
C SWSE

10. FIELD AND POOL, OR WILDCAT: East Poplar Unit

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: SW SE Section 11, T28N, R51E

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, RT, GR, etc.): 2203' G.L.

12. COUNTY OR PARISH: Roosevelt

13. STATE: Montana

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF		PULL OR ALTER CASING		WATER SHUT-OFF		REPAIRING WELL	
FRACTURE TREAT		MULTIPLE COMPLETE		FRACTURE TREATMENT		ALTERING CASING	
SHOOT OR ACIDIZE	X	ABANDON*		SHOOTING OR ACIDIZING		ABANDONMENT*	
REPAIR WELL		CHANGE PLANS		(Other)			
(Other)				(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

It is proposed to acidize this well with 2,000 gallons of retarded 28% HCL acid and overflush with 50 bbls. of lease crude.

This well is pumping at the rate of 60 BFPD 29 BOPD 31 BWPD 52% W.C.. Fluid should be doubled and oil production should be increased by approximately 20 BO.

U. S. GEOLOGICAL SURVEY
RECEIVED
MAY 15 1973
CASPER, WYOMING

18. I hereby certify that the foregoing is true and correct

SIGNED W. E. Bracken TITLE District Superintendent DATE May 7, 1973

(This space for Federal or State office use)

APPROVED BY Virgil R. Lusk TITLE DISTRICT ENGINEER DATE 5-14-73

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

COPY RETAINED DISTRICT OFFICE

Form No. 2

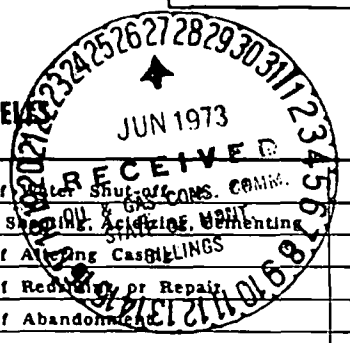
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)

TO

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.



SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	XX
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

June 25, 1973

Following is a {notice of intention to do work / report of work done} on land {leased} described as follows:

LEASE East Poplar Unit No. 100

MONTANA (State) Roosevelt (County) East Poplar Unit (Field)

Well No. 100 SW SE (m. sec.) Section 11 (Township) T28N (Range) R51E (Meridian) MPM

The well is located 660 ft. from {S} line and 1989 ft. from {E} line of Sec. 11

LOCATE ACCURATELY ON PLAT ON BACK OF THIS FORM THE WELL LOCATION, AND SHOW LEASE BOUNDARY

The elevation of the derrick floor above the sea level is 2203' G.L.

READ CAREFULLY — **DETAILS OF PLAN OF WORK** — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

Filled annulus with salt water and pressured to 2000 PSI. Filled tubing and established injection rate of 1/4 BPM at 1000 PSI. Released packer, spotted acid, set packer and acidized the B-1 Zone perforations with 2000 gallons 28% HCL with inhibitor, demulsifer and iron seq. agent added. Over flushed acid with 50 bbls. salt water.

Maximum Rate 1/2 BPM Minimum Rate 1/4 BPM Average Rate 1/2 BPM
Maximum PSI 1400# Minimum PSI 900# Average PSI 1000#

Approved subject to conditions on reverse of form

Date JUN 29 1973

By ORIGINAL SIGNED BY: J. R. Hug, Supervisor
District Office Agent

Title

Company Murphy Oil Corporation

By ORIGINAL SIGNED BY W. G. BROWN

Title District Superintendent

Address P.O. Box 547, Poplar, Montana 59255

COMMISSION USE ONLY
API WELL NUMBER
25
STATE COUNTY WELL

NOTE:—Reports on this form to be submitted to the District Agent for Approval in Quadruplicate

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

OVER

2

Form 9-331
(May 1963)

ENVIRONMENTAL PROTECTION AGENCY

NOV 5 1998

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1424.

5. LEASE DESIGNATION AND SERIAL NO.
BLM-A-029305A

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use APPLICATION FOR PERMIT—" for such proposals.)

MONTANA OFFICE

U.S. Geological Survey
RECEIVED
JUN 28 1973
Billings, Montana

1. OIL WELL [X] GAS WELL [ ] OTHER

7. UNIT AGREEMENT NAME
East Poplar Unit

2. NAME OF OPERATOR
Murphy Oil Corporation

8. FARM OR LEASE NAME
East Poplar Unit

3. ADDRESS OF OPERATOR
P.O. Box 547, Poplar, Montana 59255

9. WELL NO.
No. 100

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.)
At surface

660' from the South line and 1989' from the East line

10. FIELD AND POOL, OR WILDCAT
East Poplar Unit

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
SW SE Section 11, T28N, R51E

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, RT, GR, etc.)
2203' G.L.

12. COUNTY OR PARISH
Roosevelt

13. STATE
Montana

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF	[ ]	PULL OR ALTER CASING	[ ]	WATER SHUT-OFF	[ ]	REPAIRING WELL	[ ]
FRACTURE TREAT	[ ]	MULTIPLE COMPLETE	[ ]	FRACTURE TREATMENT	[ ]	ALTERING CASING	[ ]
SHOOT OR ACIDIZE	[ ]	ABANDON*	[ ]	SHOOTING OR ACIDIZING	[X]	ABANDONMENT*	[ ]
REPAIR WELL	[ ]	CHANGE PLANS	[ ]	(Other)			
(Other)			[ ]	(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Filled annulus with salt water and pressured to 2000 PSI. Filled tubing and established injection rate of 1/4 BPM at 1000 PSI. Released packer, spotted acid, set packer and acidized the B-1 Zone perforations with 2000 gallons 28% HCL with inhibitor, demulsifer and iron seq. agent added. Over flushed acid with 50 bbls. salt water.

Maximum Rate	1/2 BPM	Minimum Rate	1/4 BPM	Average Rate	1/2 BPM
Maximum PSI	1400#	Minimum PSI	900#	Average PSI	1000#

U.S. GEOLOGICAL SURVEY
RECEIVED
JUL 5 1973
CASPER, WYOMING

18. I hereby certify that the foregoing is true and correct

SIGNED W. B. Brewer TITLE District Superintendent DATE June 25, 1973

(This space for Federal or State office use)

APPROVED BY Virgil C. Paul TITLE DISTRICT ENGINEER DATE 7-3-73
CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

Form 9-331
(May 1963)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPLICATE* (Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1424.

5. LEASE DESIGNATION AND SERIAL NO.: BLM-A-029305A

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)

U.S. Geological Survey
RECEIVED
JUN 28 1973
Billings, Montana

1. OIL WELL [X] GAS WELL [ ] OTHER

7. UNIT AGREEMENT NAME: East Poplar Unit

2. NAME OF OPERATOR: Murphy Oil Corporation

8. FARM OR LEASE NAME: East Poplar Unit

3. ADDRESS OF OPERATOR: P.O. Box 547, Poplar, Montana 59255

9. WELL NO.: No. 100

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface

660' from the South line and 1989' from the East line

10. FIELD AND POOL, OR WILDCAT: East Poplar Unit

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: SW SE Section 11, T28N, R51E

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, RT, GR, etc.): 2203' G.L.

12. COUNTY OR PARISH: Roosevelt

13. STATE: Montana

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF	[ ]	PULL OR ALTER CASING	[ ]	WATER SHUT-OFF	[ ]	REPAIRING WELL	[ ]
FRACTURE TREAT	[ ]	MULTIPLE COMPLETE	[ ]	FRACTURE TREATMENT	[ ]	ALTERING CASING	[ ]
SHOOT OR ACIDIZE	[ ]	ABANDON*	[ ]	SHOOTING OR ACIDIZING	[X]	ABANDONMENT*	[ ]
REPAIR WELL	[ ]	CHANGE PLANS	[ ]	(Other)			
(Other)				(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.) *

Filled annulus with salt water and pressured to 2000 PSI. Filled tubing and established injection rate of 1/4 BPM at 1000 PSI. Released packer, spotted acid, set packer and acidized the B-1 Zone perforations with 2000 gallons 28% HCL with inhibitor, demulsifer and iron seq. agent added. Over flushed acid with 50 bbls. salt water.

Maximum Rate	1/2 BPM	Minimum Rate	1/4 BPM	Average Rate	1/2 BPM
Maximum PSI	1400#	Minimum PSI	900#	Average PSI	1000#

18. I hereby certify that the foregoing is true and correct

SIGNED ORIGINAL SIGNED W. G. BROWN TITLE District Superintendent DATE June 25, 1973

(This space for Federal or State office use)

APPROVED BY Virgil R. Pankl TITLE DISTRICT ENGINEER DATE 7-3-73

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

Form No. 2

GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)

TO

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	
		Workover Potential	X

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

July 9, 1973

Following is a {report of work done} on land {leased} described as follows:

LEASE East Poplar Unit No. 100

MONTANA (State) Roosevelt (County) East Poplar Unit (Field)

Well No. 100 SW SE (m. sec.) Section 11 T28N (Township) R51E (Range) MPM (Meridian)

The well is located 660 ft. from {S} line and 1989 ft. from {W} line of Sec. 11

LOCATE ACCURATELY ON PLAT ON BACK OF THIS FORM THE WELL LOCATION, AND SHOW LEASE BOUNDARY

The elevation of the derrick floor above the sea level is 2203' G.L.

READ CAREFULLY — **DETAILS OF PLAN OF WORK** — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

East Poplar Unit No. 100 is pumping at the rate of 130 BFPD 42 BOPD 88 BWPD 68% W.C. - Workover Potential

Approved subject to conditions on reverse of form

Date JUL 10 1973

By ORIGINAL SIGNED BY Herbert D. Hadley, Petroleum Geologist
District Office Agent Title

Company MURPHY OIL CORPORATION

By ORIGINAL SIGNED BY W. G. BROWN

Title District Superintendent

Address P.O. Box 547, Poplar, Montana 59255

COMMISSION USE ONLY
API WELL NUMBER
25
STATE COUNTY WELL

NOTE:—Reports on this form to be submitted to the District Agent for Approval in Quadruplicate

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

OVER

2

Form 9-331
(May 1963)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPLICATE* (Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1424.

5. LEASE DESIGNATION AND SERIAL NO.
~~BLM-A-029305A~~ 14202564047

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)

U.S. Geological Survey
RECEIVED
JUL 10 1973
Billings, Montana

1. OIL WELL ☒ GAS WELL ☐ OTHER

7. UNIT AGREEMENT NAME
East Poplar Unit

2. NAME OF OPERATOR
Murphy Oil Corporation

8. FARM OR LEASE NAME
East Poplar Unit

3. ADDRESS OF OPERATOR
P.O. Box 547 Poplar, Montana 59255

9. WELL NO.
No. 100

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.)
At surface
660' from the South line and 1989' from the East line

10. FIELD AND POOL, OR WILDCAT
East Poplar Unit

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
SW SE Section 11, T28N, R51E

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, RT, GR, etc.)
2203' G.L.

12. COUNTY OR PARISH
Roosevelt

13. STATE
Montana

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF	☐	PULL OR ALTER CASING	☐	WATER SHUT-OFF	☐	REPAIRING WELL	☐
FRACTURE TREAT	☐	MULTIPLE COMPLETE	☐	FRACTURE TREATMENT	☐	ALTERING CASING	☐
SHOOT OR ACIDIZE	☐	ABANDON*	☐	SHOOTING OR ACIDIZING	☐	ABANDONMENT*	☐
REPAIR WELL	☐	CHANGE PLANS	☐	(Other) Workover Potential			☒
(Other)				(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

East Poplar Unit No. 100 is pumping at the rate of 130 BFPD 42 BOPD 88 BWPD 68% W.C. Workover Potential

18. I hereby certify that the foregoing is true and correct

SIGNED ORIGINAL SIGNED BY W. G. BROWN TITLE ~~District Superintendent~~ DATE ~~July 9, 1973~~

(This space for Federal or State office use)

APPROVED BY [signature] TITLE DISTRICT ENGINEER DATE 7-13-73

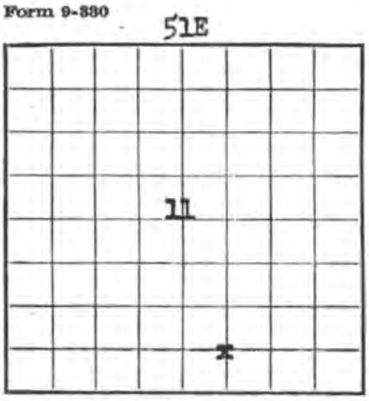
CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

P.I. 7-54

Budget Bureau No. 42-R-355.3.
Approval expires 12-31-60.

Form 9-330



LOCATE WELL CORRECTLY

U. S. LAND OFFICE Billings
SERIAL NUMBER BIM A 029305 A
LEASE OR PERMIT TO PROSPECT 6035

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LOG OF OIL OR GAS WELL

Company Murphy Corporation Address Poplar, Montana
Lessor or Tract Fed. BIM-A-029305-A Field East Poplar Unit State Montana
Well No. 100 Sec. 11 T. 28N R. 51E Meridian M.P.M. County Roosevelt
Location 660 ft. [N.] of S Line and 1989 ft. [W.] of E Line of Sec. 11 Elevation 2215 RKB
(Derrick floor relative to sea level)

The information given herewith is a complete and correct record of the well and all work done thereon so far as can be determined from all available records.

Signed M. H. James

Date August 9, 1957 Title Field Production Supt.

The summary on this page is for the condition of the well at above date.

Commenced drilling June 29, 1957 Finished drilling July 23, 1957

OIL OR GAS SANDS OR ZONES

(*Denote gas by G*)

No. 1, from 5805 to 5817 Oil No. 4, from ..... to .....
No. 2, from ..... to ..... No. 5, from ..... to .....
No. 3, from ..... to ..... No. 6, from ..... to .....

IMPORTANT WATER SANDS

No. 1, from ..... to ..... No. 3, from ..... to .....
No. 2, from ..... to ..... No. 4, from ..... to .....

CASING RECORD

Size casing	Weight per foot	Threads per inch	Make	Amount	Kind of shoe	Cut and pulled from	Perforated		Purpose
9 5/8	32.30	8 rd.	Amer	1025.32	Howco Float				Surface
5 1/2	15.50	8 rd.	Amer	5915.00	Howco Automatic Fillup	5805	5817		Oil String

MUDDING AND CEMENTING RECORD

Size casing	Where set	Number sacks of cement	Method used	Mud gravity	Amount of mud used
9 5/8	1036.32	400	Pump & Plug		
5 1/2	5925.00	300	Pump & Plug		

PLUGS AND ADAPTERS

Heaving plug—Material ..... Length ..... Depth set .....
Adapters—Material ..... Size .....

SHOOTING RECORD

Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out
		See Attached Sheets				

TOOLS USED

Rotary tools were used from 0 feet to 5926 feet, and from ..... feet to ..... feet
Cable tools were used from ..... feet to ..... feet, and from ..... feet to ..... feet

DATES

L.P. August 7, 1957 Put to producing July 23, 1957

The production for the first 24 hours was 700 barrels of fluid of which 12 % was oil; ..... % emulsion; 88 % water; and ..... % sediment.

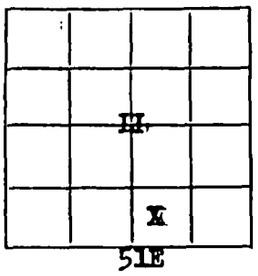
Gravity, °Bé. 40.2 @ 60°

If gas well, cu. ft. per 24 hours ..... Gallons gasoline per 1,000 cu. ft. of gas .....

Rock pressure, lbs. per sq. in. .....

MURPHY 100 (EPU-100) 800

LOCATE WELL CORRECTLY



Form No. 4
(Gen. Rule 206.3 & 231)

(SUBMIT IN TRIPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

RECEIVED
AUG 20 1957
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA

LOG OF WELL

Company Murphy Corporation Lease Fed. BLM-A# 029305-A Well No. 100

Address Poplar, Montana Field (or Area) East Poplar Unit

The well is located 660 ft. from (S) line and 1989 ft. from (E) line of Sec. 11

Sec. 11; T. 28N; R. 51E; County Roosevelt; Elevation 2215 RKB (D.F., R.B. or G.L.)

Commenced drilling June 29, 1957; Completed July 23, 1957

The information given herewith is a complete and correct record of the well. The summary on this page is for the condition of the well at the above date.

Completed as Oil Well (oil well, gas well, dry hole)

Signed M K James

Title Field Production Supt.

Date August 9, 1957

IMPORTANT ZONES OF POROSITY

(denote oil by O, gas by G, water by W; state formation if known)

From 5805 to 5817 Oil
From ____ to ____
From ____ to ____
From ____ to ____
From ____ to ____
From ____ to ____
From ____ to ____
From ____ to ____

CASING RECORD

Size Casing	Weight Per Ft.	Grade	Thread	Casing Set	From	To	Sacks of Cement	Cut and Pulled from
9 5/8"	32.30	H-40	8 rd.	1036.32			400	
5½"	15.50	J-55	8 rd.	5925.00			300	

TUBING RECORD

Size Tubing	Weight Per Ft.	Grade	Thread	Amount	Perforations
2 3/8" & 2 7/8"				@ 5802.28	

COMPLETION RECORD

Rotary tools were used from 0 to 5926
Cable tools were used from ____ to ____
Total depth 5926 ft.; Plugged back to 5865 T.D.; Open hole from ____ to ____

PERFORATIONS			ACIDIZED, SHOT, SAND FRACED, CEMENTED			
Interval From	Interval To	Number and Size and Type	Interval From	Interval To	Amount of Material Used	Pressure
5805	5817	4 j.s.p.f.	5805	5817	1000 gal. etching	1000#

(If P&A show plugs above)

INITIAL PRODUCTION

Well is producing from Madison (pool) formation.

I. P. 84 barrels of oil per 24 hours Pumping (pumping or flowing)

____ Mcf of gas per ____ hours.

616 barrels of water per 24 hours, or 88 %

RECEIVED
AUG 9 1957
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA - BILLINGS

(OVER)

10M--1-56

INITIAL PRODUCTION—(Continued)

Initial 10-day average production _____ (bbl./day) (if taken)
Pressures (if measured): Tubing _____ psi flowing; _____ psi shut-in
Casing _____ psi flowing; _____ psi shut-in
Gravity 40.2 @ 60 ° API (corrected to 60° F.)

DRILL STEM TESTS

D.S.T. No.	From	To	Tool Open (Min.)	Shut-In	F.P.	S.I.P.	Recovery	Cushion
				See Attached Sheets				

LOGS RUN

Type	Intervals	
	From	To
See Attached Sheets		

FORMATION RECORD

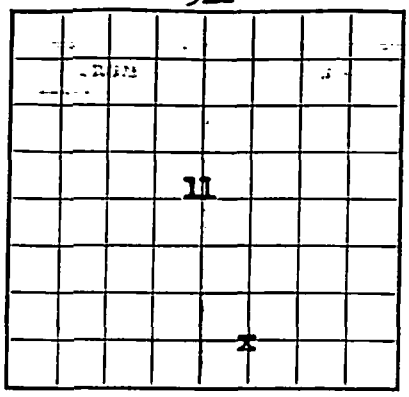
From	To	SAMPLE AND CORE NO. AND DESCRIPTION	Top of Formation
		See Attached Sheets	

RY #39

Budget Bureau No. 42-R-358.3.
Approval expires 12-31-60.

Form 9-330

51E



LOCATE WELL CORRECTLY

FORMATION RECORD—Continued

TOTAL DEPTH

U. S. LAND OFFICE Billings
SERIAL NUMBER BIM A 029305 A
LEASE OR PERMIT TO PROSPECT 6035

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LOG OF OIL OR GAS WELL

Company Murphy Corporation Address Poplar, Montana

Lessor or Tract Fed. BIM-A-029305-A Field East Poplar Unit State Montana

Well No. 100 Sec. 11 T. 28N R. 51E Meridian M.P.M. County Roosevelt

Location 660 ft. {N.} of S Line and 1989 ft. {E.} of E Line of Sec. 11 Elevation 2215 RKB
(Derrick floor relative to sea level)

The information given herewith is a complete and correct record of the well and all work done thereon so far as can be determined from all available records.

Signed M. H. James

Date August 9, 1957 Title Field Production Supt.

The summary on this page is for the condition of the well at above date.

Commenced drilling June 29, 19 57 Finished drilling July 23, 19 57

OIL OR GAS SANDS OR ZONES

(Denote gas by G)

No. 1, from 5805 to 5817 Oil No. 4, from ____ to ____

No. 2, from ____ to ____ No. 5, from ____ to ____

No. 3, from ____ to ____ No. 6, from ____ to ____

IMPORTANT WATER SANDS

No. 1, from ____ to ____ No. 3, from ____ to ____

No. 2, from ____ to ____ No. 4, from ____ to ____

CASING RECORD

Size casing	Weight per foot	Threads per inch	Make	Amount	Kind of shoe	Cut and pulled from	Perforated		Purpose
							From	To	
9 5/8	32.30	8 rd.	Amer	1025.32	Howco Float				Surface
5 1/2	15.50	8 rd.	Amer	5914.00	Howco Automatic Fill		5805	5817	Producing

MUDDING AND CEMENTING RECORD

Size casing	Where set	Number sacks of cement	Method used	Mud gravity	Amount of mud used
9 5/8	1036.32	400	Pump & Plug		
5 1/2	5925.00	300	Pump & Plug		

PLUGS AND ADAPTERS

Heaving plug—Material ..... Length ..... Depth set .....

Adapters—Material ..... Size .....

SHOOTING RECORD

Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out
		See Attached Sheets				

TOOLS USED

Rotary tools were used from 0 feet to 5926 feet, and from ..... feet to ..... feet

Cable tools were used from ..... feet to ..... feet, and from ..... feet to ..... feet

DATES

L.P. August 7, 1957 Put to producing July 23, 1957

The production for the first 24 hours was 700 barrels of fluid of which 12 % was oil; ..... %

emulsion; 88 % water; and ..... % sediment.

Gravity, °Bé. 40.2 @ 60°

If gas well, cu. ft. per 24 hours ..... Gallons gasoline per 1,000 cu. ft. of gas .....

Rock pressure, lbs. per sq. in. .....

EMPLOYEES

Zach Brooks Drilling Company, Driller ....., Driller

....., Driller ....., Driller

FORMATION RECORD

FROM—	TO—	TOTAL FEET	FORMATION
			See Attached Sheets

FORMATION RECORD—Continued

Poplar

WELL DRILLING PLAN

Field or Area East Poplar Division Billings

County Roosevelt Total Anticipated Depth 5950'

Lease East Poplar Unit Well Name East Poplar Unit Well No. 100

Well Location SW SE Section 11-T28N-R51E

Lowest fresh water sand (for surface casing program): 90'

Casing and tubing program:

	From	To	Size	Weight	Grade	Bit Size
Conductor						
Surface	0	1000'	9-5/8"	36#	J-55	12-1/4"
Intermediate						
Production	0	5950'	5-1/2"	15.50#	J-55	8-3/4"
Tubing	0	5950'	2-7/8"	6.40#	J-55	E.U.E.

Potential Drilling Hazards Gas and water flow in the Judith River.

Mud Program Drill surface hole with fresh water and allow mud weight to build to approximately 10#. Use native mud and fresh water under surface to 4000'. Convert to gyp mud to drill through the pay sections.

Coring Method and Size Core Bits to be used 6-1/8" Diamond

Intervals Cores to be analyzed All porosity with show.

Method of Drill Stem Testing 2 hour tests.

Anticipated Completion Zone "B" Zones

Method of opening pay, perforation or open hole, and approximate interval: perforate

Expected Formation Treatments 1000 gallons of etching acid

Expected logs for Development, Evaluation, or Completion Purposes A Gamma Ray-Neutron will be run inside production casing from 3000' to T.D. in addition to the logs noted on the Geological Prospectus.

Remarks:

Date 6-10-57 Production Superintendent Harold Nilsen

eh

HM:eh

Poplar

GEOLOGICAL PROSPECTUS

Division Billings Lease No. 6035

Operator Murphy Corporation Well Name East Poplar Unit Well No. 100

Location: Section SW SE 11 Township 28 North Range 51 East

Pool Name: East Poplar County Roosevelt State Montana

Type of Well: OIL x Gas _____ Exploratory _____ Development x

Objective Formation Madison Projected Depth 5950

Well Elevation 2212' K.B. (est); 2200' Gr. (est)

Expected Stratigraphic Section and Estimated Depths:

Judith River	860 (+1352)	Piper limestone	4450 (-2238)
Eagle	1230 (+ 982)	Spearfish	4704 (-2492)
Niobrara	2100 (+ 112)	Amsden	4800 (-2588)
Greenhorn	2440 (- 228)	Heath	4960 (-2748)
Muddy	3007 (- 795)	Otter	5120 (-2908)
Dakota	3216 (-1004)	Kibbey sand	5265 (-3053)
Morrison	3608 (-1396)	Kibbey limestone	5418 (-3206)
Swift	3672 (-1460)	Madison	5510 (-3298)
Rierdon	4194 (-1982)	A zone	5587 (-3375)
Piper shale	4365 (-2153)	B zone	5748 (-3536)
		C zone	5898 (-3686)

Anticipated Pay Horizons, Net Pay and Expected Depths:

A3 zone	(6')	5624 (-3412)	B2 zone	(15')	5777 (-3565)
B1 zone	(8')	5748 (-3536)	C2 zone	(8')	5922 (-3710)

Recommended Coring and Formation Testing Program:

Core - B-4 ——— 20'*
C1 & C2— 40'*

Tests - B1, B2, B3 & C2

*have cores analyzed and restored state run on B4 core.
circulate Heath and Kibbey sands and core on show.

Recommended Sampling and Logging Program:

10' samples from 2000 to 4000'
5' samples from 4000 to T.D.

2" E.S. base surface pipe to total depth
5" E.S. detail from 2000' to T.D.
5" M.L. from 2000' to T.D.

Remarks: (Including pertinent data relative to location accessibility, unusualy drilling problems due to surface or subsurface conditions, etc.)

In setting up the coring and testing program for #100 the recommendations of the Engineering Committee have been followed with the exception of the Judith River. From past experience the cost involved combined with the extremely poor core recovery it does not seem to justify attempting to core or test this zone. The prospectus is set up to run a high sensitivity radio active log. From this log it is believed that the top of the Judith River can be accurately picked and the structural picture more clearly defined. It is also believed that from this type of log the porous zones can be picked.

Wade J Moore
Acting Division Geologist

6-7-57
Date

WM/wmf

1

EAST POPLAR UNIT WELL NO. 100

WELL LOG DATA

g	Interval Logged	
er Electrical Survey 5"	2000'	5922'
er Microlog 2"	1040'	5920'
er Microlog 5"	2000'	5865'
Radioactivity Log 2"	600'	5850'
Radioactivity Log 5"	600'	5865'

SCHLUMBERGER TOPS

Eagle	1240
Niobrara	2093
Greenhorn	2444
Graneros	2651
Muddy Sand	3003
Dakota Silt	3201
Swift	3737
Vanguard	4000
Rierdon	4278
Piper Shale	4350
Piper Limestone	4425
Gypsum Springs	4484
Spearfish	4680
Amsden	4805
Heath	4920
Otter	5100
Kibbey Sand	5236
Kibbey Limestone	5390
Madison	5478
A	5570
B	5743
C	5887

EAST POPLAR UNIT WELL NO. 100

COMPLETION DATA

CASING PROGRAM:

6-30-57: 1050' TD - Ran 32 jts. of 9 5/8" OD, H-40, ST&C, R-2, 8rd. thd., Class "1" American casing. Landed 11.00' below RKB at 1036.32'. Howco float shoe at 1036.32', 1 Howco centralizer at 1022'. Circulated 30 minutes before cementing. Cemented with 400 sacks of regular cement with 2% $CaCl_2$, 10 barrels water ahead of cement. Bumped plug with 1000#, released pressure, held ok. Full circulation while cementing. 50 sacks cement back. Plug down at 2:05 A.M., 7-1-57.

7-1-57: 1050' TD - Tested blow out preventers and 9 5/8" casing with 1000# for 30 minutes, held ok.

7-20-57: 5925' TD - Ran 139 jts. (5915') of 5 1/2", 15.50#, J-55, 8rd. thd., ST&C, R-3, Class " 1" American casing. Landed 10.00' below RKB and set 1' off bottom at 5925'. Ran Howco automatic fillup shoe at 5925'. Howco baffle collar 5877'. Ran 5 B&W centralizers at 5895', 5832', 5743', 5655' and 5573'. Ran 53 B&W scratchers spaced as follows: 5928-5574', 15'; 5574-5617', 10'; 5617-5655', 5'; 5655'-5743', 10'; 5743-5847', 5'; 5847-5877', 10'; 5877-5925', 5'. Reciprocated casing 40' while circulating 30 minutes and cementing. Cemented with 300 sacks of 1.1 Pozmix with 22% NaCl. Ran 10 barrels of water ahead. Pumped plug down with water. Bumped plug at 12:23 A.M., 7-20-57 with 1400 psi. Released pressure, float held ok. Set slips. Released Zach Brooks rig #3 at 6:00 P.M., 7-20-57.

7-21-57: 5925' TD - Moving in pulling unit.

7-22-57: 5865' PBTD - Ran Lane Wells radio-activity log from 5865' to 2000' and 1100' to 600'. Perforated B Zone, 5805'-5817', with Lane Wells Kerat-Free casing jet (4 shots per foot). Set top of Baker Model "D" production packer at 5800'.

7-23-57: 5865' PBTD - Picked up tubing and spaced out. Swabbed well down to seating nipple at 3500'. Let stand 1 hour. No fluid movement. Acidized B Zone with 1000 gallons of Dowell etching acid. Spotted acid and pressured up to 2000#. Formation broke back to 1800#. Injected first 4 barrels at 2600#, 1 BPM. Formation began breaking down. Pump rate was gradually increased to a final injection rate of 3.7 BPM at 1000#. Bleed down - 400# in 2 minutes. Opened well to pit, flowed off pressure head and died. Swabbed load water and scent acid and began showing oil on 5th run. Last 30 minutes, swabbed to pit at estimated rate of 32 BFPH, 80% water. Chlorides of water - 93,000 PPM.

7-24-57: 5865' PBTD - Preparing to put on pump for testing. After shut in overnight well filled, no pressure. Swabbed well 7 hours. Last 2 hours, swab rate - 31 BFPH, 86% water (115 BOPD, 745 BWPD). Spotted 50 barrels salt water down tubing. Started out of hole.

Completion Data Continued

7-25-57: 5865' PBTD - Laid down 2-3/8" tubing and re-ran as shown in tubing record. Ran rods.

7-26-57: 5865' PBTD - preparing to set pumping unit.

7-27-57: 5865' PBTD - waiting on power.

7-28-57: 5865' PBTD - waiting on power to start pumping tests.

7-29-57: 5865' PBTD - Will test today.

7-30-57: 5865' PBTD - On a 4 hour test, pumped at the rate of 708 BFPD, 88% water (85 BOPD, 623 BWPD).

7-31-57: 5865' PBTD - On a 24 hour test, pumped at rate of 697 BFPD, 88% water (84 BOPD, 613 BWPD).

8-1-57: 5865' PBTD - Pumping, no test.

8-2-57: 5865' PBTD - 4 hour test, pumping rate 675 BFPD, 86% water, (581 BWPD, 94 BOPD).

8-3-57: 5865' PBTD - Pumping, no test.

8-4-57: 5865' PBTD - Pumping, no test.

8-5-57: 5865' PBTD - 3 hour test, pumped at rate of 693 BFPD, 87% water, (603 BWPD, 90 BOPD).

8-6-57: 5865' PBTD - On 4 hour test, pumped at rate of 690 BFPD, 88% water, (607 BWPD, 83 BOPD).

8-7-57: 5865' PBTD - On 4 hour test, pumped at rate of 700 BFPD, 88% water, (616 BWPD, 84 BOPD). This is the initial potential test. To pump for 30 days to attempt to exhaust water. To drop from report.

Completion Data Continued (Tubing and Rod Record)

Tubing Record:

8.50'	Below RKB
30.78'	Top joint 2-7/8" EUE, 8rd. thd., 6.50#, J-55, Class 1
2.10'	2-7/8" tubing sub
2984.97'	98 joints 2-7/8" EUE, 8rd. thd., 6.50#, J-55, Class 1
1.25'	2-7/8" EUE, 8rd. thd., seating nipple
~~30.28'~~	~~1 joint, 2-7/8", 8rd. thd., 6.50#, J-55, Class 1~~ included in total of 2984.9
.80'	2-7/8" x 2-3/8", EUE, 8rd. thd., swadge with 2-7/8" collar
2765.45'	89 joints 2-3/8", EUE, 8rd. thd., 4.60#, J-55, Class 2
3.65'	2-3/8" perforated tubing sub
.40'	Latch on sub
5798.20'	equals 5800' Lane Wells (top packer)
2.28'	Baker seal assembly
5800.48'	equals 5802.28' Lane Wells (Bottom tail pipe)

Rod Record:

8', 6', 4' and 2' - 7/8" scraper subs	20'
38 - 7/8" scraper rods	950'
80 - 3/4" plain rods	2000'
2 - 3/4" plain sub	

Pump: 2 1/2" x 2" x 1 1/2" x 12' x 24' Axelson volumex insert pump with 3 cup bottom hold down.

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EAST POPLAR UNIT WELL NO. 100

WELL LOG DATA

TYPE OF LOG	INTERVAL LOGGED
Schlumberger Electrical Survey 5"	2000'-5922'
Schlumberger Microlog 2"	1040'-5920'
Schlumberger Microlog 5"	2000'-5865'
Lane Wells Radioactivity Log 2"	600'-5850'
Lane Wells Radioactivity Log 5"	600'-5865'

SCHLUMBERGER TOPS

	Depth	Datum	Thickness
Eagle	1240	+ 965	
Niobrara	2093	+ 122	
Greenhorn	2444	- 229	
Graneros	2651	- 436	
Muddy Sand	3003	- 788	
Dakota Silt	3201	- 986	
Swift	3737	-1522	
Vanguard	4000	-1785	
Rierdon	4178	-1963	
Piper Shale	4350	-2135	
Piper Limestone	4425	-2210	
Gypsum Springs	4484	-2269	
Spearfish	4680	-2465	
Amsden	4805	-2590	
Heath	4930	-2715	
Otter	5100	-2885	
Kibbey Sand	5236	-3021	
Kibbey Limestone	5390	-3175	
Madison	5478	-3263	
A-1	5570	-3355	3'
A-2	5578	-3363	2'
A-3	5588	-3373	9'
A-4	5597	-3382	26'
Salt	5685 to 5704		19'
B-1	5713	-3528	9'
B-2	5759	-3544	15'
B-3	5781	-3566	7'
B-4	5814	-3599	5'
B-5	5850	-3635	?
C-1	5887	-3672	?
C-3	5907	-3692	32'

EAST POPLAR UNIT WELL NO. 100

DRILL STEM TESTS

DST #1: 5015'-5025' Ran DST #1 with Halliburton, single full hole packer, 5/8" bottom choke, no water cushion. Tool open 38 minutes, shut in 20 minutes. Tool opened with strong blow. Salt water to surface in 28 minutes, no gas. Flowed to pit 10 minutes at the rate of 3/4 BPM with rainbow of oil. IBHFP--450#, FBHFP--2180#, BHSIP--2470#, Hydro--2720#. Weight of salt water 8.8 per gallon.

DST #2: 5747'-5758' B Zone. Ran DST #2 with Halliburton, single packer, full hole, 5/8" bottom choke, no water cushion. Tool open 2 hours, shut in 30 minutes. Tool opened with good blow and remained same throughout test. Gas to surface while closing tool (2 hours). Recovered 180' clean oil, 90' muddy oil and 90' salty sulphur water. IBHFP--42#, FBHFP--205#, BHSIP--2030# (still building), Hydro--3320'.

DST #3: 5762'-5778' B Zone. Ran DST #3 with Halliburton, single full hole packer, 5/8" bottom choke, no water cushion. Tool open 2 hours, closed 30 minutes. Tool open with strong blow, continued throughout test. Gas to surface 2 hours. Recovered 630' mud-cut oil, 360' water-cut oil, and 2570' salty sulphur water. IBHFP--83#, FBHFP--1820#, BHSIP--2472#, Hydro--3320#.

DST #4: 5780'-5803' B Zone. Ran DST #4 with Halliburton, single full hole packer, no water cushion, 5/8" bottom choke. Tool opened with weak blow for 5 minutes and stopped. Tool open 2 hours, shut in 30 minutes. Recovered 40' muddy water. IBHFP--10#, FBHFP--23#, BHSIP--865#, Hydro--3345#.

DST #5: 5801.5'-5817' B Zone. Ran DST #5 with Halliburton single packer, 5/8" bottom choke, no water cushion. Tool open 2 hours, shut in 30 minutes. Tool opened with weak blow, increased to fair blow in 15 minutes, dead in 30 minutes. Recovered 90' gas-cut mud with rainbow of oil. IBHFP--20#, FBHFP--60#, BHSIP--2860#, Hydro--3380#.

EAST POPLAR UNIT WELL NO. 100

MUD PROGRAM SUMMARY

MUD SERVICE CO. — Northern Mud Co.

MUD ADDITIVES AND COST:

Material	Surface Hole Amt.	Surface Hole Cost	Surface - T.D. Amt.	Surface - T.D. Cost	Total Amt.	Total Cost
Magcobar	310	948.91			310	948.91
Salt Gel	75	213.39	66	187.78	141	401.17
Cement	7	13.45			7	13.45
Hulls	23	115.00			23	115.00
Gypsum			20	44.00	20	44.00
Press			800	400.00	800	400.00
My-Lo-Gel			133	1064.00	133	1064.00
Total Cost		1290.75		1695.78		2986.53
Trucking		142.60		85.22		227.82
Fed. Tax		4.44		2.56		6.78
Total		1437.79		1783.56		3221.35
Salt Water		261.37				261.37
Crude Oil			140	408.80	140	408.80
Grand Total		$1699.16		$2192.36		$3891.52

UNIT MUD COST:

	Total Cost	Feet Drld.	Cost per Foot	Days Used	Cost per Day
Spud - T.D.	3891.52	5925	.66	22	176.89
Spud - Surface	1699.16	1050	1.62	1 1/2	1132.77
Surface - T.D.	2192.36	4875	.45	20 1/2	106.94

MUD PROPERTIES:

Depth	Weight	Viscosity	Water Loss	Salt Content PPM	Remarks
800	11.6	41	--	--	Surface Hole
4673	10.2	34	22	6,600	Breakover
5067	10.3	44	14.4	4,950	After DST #1
5201	10.4	54	11.0	20,750	Drilling
5405	10.5	59	9.6	17,260	Drilling
5577	10.5	54	14.8	8,250	Drilling, repair rig
5668	10.9	56	10.6	--	Drilling
5758	10.4	59	8.4	--	DST #2
5817	10.4	62	9.2	--	Core #1
5926	10.4	68	10.6	--	T. D.

Mud Program Summary Continued

SUMMARY:

A 12 1/4" hole was drilled to 1050 feet and 9 5/8" surface casing was landed and cemented at 1037 feet. The surface hole was drilled with salt water and at 800 feet the mud weight was increased to 11.6# per gallon with addition of Barite and Salt Gel to control the Judith River sandstone. The mud weight was built to 12.0# per gallon before coming out of the hole to run the casing. The pipe was stuck at 400 feet while drilling and circulation was lost while trying to free the pipe. Salt Gel and hulls were mixed to regain returns. No further difficulty resulted.

Fresh water was used to drill the 8 3/4" hole to 4500 feet. At this depth the mud was converted to a gyp-base mud with additions of gypsum starch and preservative. After the break-over the mud properties were maintained as follows to a depth of 5000 feet: Wt. 10.0 to 10.2# per gallon, Vis. 35 to 45 sec. per quart, and W.L. 15 to 25 cc. By 5000 feet the weight had been increased to 10.4# per gallon, the Vis. to 50 to 60 sec. per quart, and the W.L. lowered below 10 cc to test the Heath Sandstone. These properties were maintained reasonably well from this depth to T.D. at 5926 feet. Mud properties fluctuated more than usual on this well, mainly because the crews were not familiar with the area. Apparently too much water was added to let the weight build up sufficiently to emulsify the system until a depth of 5800 feet had been reached. At this depth the weight began climbing rapidly and oil was added to control the weight.

Two cores were cut and four drill stem tests were run without difficulty. Schlumberger E.S. and Micrologs were run and 5 1/2" casing was set and cemented at 5925 feet.

Mud costs were slightly higher than similiar wells, but were not unreasonable. A portion of the increased cost can be attributed to running too much water which prevented proper utilization of the crude oil for emulsifying and which resulted in a greater than necessary mud volume. Supervision by the mud company engineer was also infrequent. Costs for surface hole drilling was increased because of lost circulation.

EAST POPLAR UNIT WELL NO. 100

DRILLING BIT RECORD

Bit No.	Make	Size	Type	Ser. No.	From	To	Hours
1	Hughes	8 3/4"	OSC-3	37692	1050	2830	15
2	C.P.	"	ES-2	79781	2830	3605	9
3	C.P.	"	ES-2	82688	3605	3820	7
4	Hughes	"	OSC -1G	56002	3820	4121	7
5	C.P.	"	ES-2	124201	4121	4489	16
6	C.P.	"	ES-2	124210	4469	4620	10 1/4
7	C.P.	"	ES-3	124203	4620	4708	6
8	Hughes	"	OSC-1G	57546	4708	4913	19
9	C.P.	"	ES-2	124469	4913	4990	8 1/2
10	Hughes	"	OWV	1453	4990	5017	4
11	C.P.	"	EM1-V	Re-run	5017	5085	4 1/2
12	C.P.	"	EM1-V	120527	5085	5132	48
13	C.P.	"	ES-2	115881	5132	5272	19 1/2
14	C.P.	"	ES-2	124474	5272	5317	7
15	C.P.	"	ES-2	120534	5317	5397	14 1/2
16	Hughes	"	OSC	64171	5397	5497	17
17	Hughes	"	OWV	1461	5497	5666	31
18	Hughes	"	OWV	1455	5666	5803	13 3/4
19	Hughes	"	OWV	Re-run	5773	5817	9 1/4
19	C.P.	"	ES-3	43937	5817	5880	13 1/4
20	C.P.	"	ES-3	43172	5880	5925	2 3/4

TOTCO RECORD

Totco Footage	Degrees
100	3/4
400	1/2
800	1
1021	3/4
1550	1/2
2050	1/2
2525	1
3020	1
3585	1 3/4
3820	1
4445	1 1/4
4880	1
5317	1/2

EAST POPLAR UNIT WELL NO. 100

DIAMOND CORE BIT RECORD

Core No.	From	To	Footage	Hours	Size	Make	No.	Type	Ser. No.
1	5797	5807	10	10 1/2	7 3/8"	Christensen		C-18-E	E-4823
2	5880	5900	20	9	"	"		"	"

EAST POPLAR UNIT WELL NO. 100

FUTURE POSSIBLE PRODUCING INTERVALS

A-1, A-2 and B-1 Zones

Because of structural position and results obtained from the Drill Stem Tests.

EAST POPLAR UNIT WELL NO. 100

SAMPLE DESCRIPTIONS

2000-2100	Shale: dark gray, some white, fine grained sandstone.
2100-2220	Shale: dark gray, with white to buff calcareous specks, also above sandstone.
2220-2240	Shale: dark gray, calcareous.
2245	Sample Top Greenhorn
2240-2520	Shale: dark gray with some crystalline, brown to gray limestone.
2520-2640	Shale: dark gray, stringers of light gray sandstone.
2640-2800	Shale: as above, traces of brownish-gray, green sandy shale.
2800-3000	Shale: dark gray with stringers of hard, fine grained, gray sandstone.
3000	Sample Top Muddy Sandstone
3000-3080	Sandstone: hard, fine, gray, salt and pepper, fair permeability and porosity, no show, dark gray shale as above.
3080-3200	Shale: dark gray with stringers of above sandstone.
3200	Sample Top Dakota Siltstone
3200-3300	Siltstone: gray, very limey above black shale.
3300	Sample Top Dakota Sandstone
3300-3380	Sandstone: gray, medium to course grained, well sorted, good permeability and porosity, no show.
3380-3420	Shale: dark gray, calcareous.
3420-3480	Sandstone: gray, medium grained, well sorted, hard, good permeability and porosity, no show.
3480-3600	Shale: dark gray with above sandstone.
3600-3700	Shale: as above with traces of brown to buff limestone.
3700-3740	Shale: dark gray to black, splintery.
3740	Sample Top Swift
3740-3780	Sandstone: medium grained, gray glauconitic, fair permeability and porosity, no show.

Sample Descriptions Continued

3780-3820	Shale: dark gray to black, traces of gray glauconitic shale, some of above sandstone.
3820-4000	Shale: dark gray to black.
4000	Sample Top Vanguard
4000-4030	Sandstone: fine grained, gray, with above shale.
4030-4180	Shale: dark gray to black.
4180	Sample Top Rierdon
4180-4230	Sandstone: medium grained, with sorted sandstone, fair permeability and porosity, no show.
4230-4350	Shale: black, splintery, with traces of buff to tan limestone, also some gray siltstone.
4350	Sample Top Piper Shale
4350-4400	Shale: dark gray with red, sandy shale.
4400-4430	Shale: as above with stringers of gray silty sandstone.
4430	Sample Top Piper Limestone
4430-4500	Limestone: gray-brown, hard dense, with few pieces with pin point porosity, dark gray shale as above.
4500-4520	Sandstone: medium to fine grained, silty, friable, with fair permeability and porosity, no show, shale as above.
4520-4570	Shale: dark gray, splintery, with traces of white anhydrite.
4570-4620	Sandstone: very fine grained, gray, soft, friable, fair permeability and porosity, no show, black and red, splintery shale.
4620-4680	Shale: dark gray, marine shale above sandstone.
4680	Sample Top Spearfish
4680-4720	Sandstone: red, fine grained, silty with traces of red limey shale, also black, splintery shale.
4720-4800	Shale: black, marine with stringers of the above red shale.
4805	Sample Top Amsden
4800-4850	Limestone: white and pink, hard, dense with black marine shale.
4850-4870	Shale: black and red, very calcareous.
4870-4900	Limestone: cream to buff, hard, dense with the above shale.

Sample Descriptions Continued

4900-4910	Shale: dark gray to black, with reds.
4910-4930	Limestone: multi-colored cream, buff and gray with multi-colored shales red and blacks.
4930	Sample Top Heath
4930-4970	Shale: multi-colored red, black and purple.
4970-4980	Shale: black, trace of reds and blacks.
4980-4990	Shale: as above (trip heaving) trace of red, hard, fine grained sandstone, no show.
4990-5005	Sandstone: hard, fine grained, white, no permeability and porosity, no show, stringers of hard, dense limestone and dark gray shale.
5005-5010	Shale: red and black with trace of hard, white sandstone, no permeability and porosity, no show.
5010-5020	Sandstone: hard, white, no permeability and porosity, no show, multi-colored shales, circulated out samples.
5020-5025	Sandstone: red, medium to course grained, well sorted, good permeability and porosity, poor fluorescence, poor milky cut, stain visible under microscope. -13° low to #9.
5025-5030	Sandstone: as above less fluorescence, no cut.
5030-5045	Shale: red mostly, traces of black and purple.
5045-5055	Sandstone: medium grained, red and purple, trace of permeability and porosity, no show.
5055-5070	Shale: multi-colored, limey.
5070-5080	Shale: red, sandy, with purple and black.
5080-5100	Sandstone: white, fine grained, hard, tight, no show, multi-colored shales.
5105	Sample Top Otter
5100-5110	Shale: green, gummy, calcareous.
5110-5130	Shale: black, red, splintery, traces of cream colored, dense limestone.
5130-5150	Limestone: cream to buff, dense, poor to no permeability and porosity, traces of fine grained, white sand, no show.
5150-5200	Shale: multi-colored, with stringers of fine grained limey sandstone.

Sample Descriptions Continued

5200-5230	Shale: black, marine, calcareous.
5233	Sample Top Kibbey Sandstone
5230-5260	Sandstone: hard, white, tight, fine grained, no permeability porosity, no show.
5260-5270	Siltstone: grey, slightly calcareous, traces of above sandstone.
5270-5280	Sandstone: red, very fine grained, hard, tight, poor to no permeability and porosity, few pieces in sample tray, spotted fluorescence, no cut above black shale.
5280-5284	Sandstone: medium grained, pink, fairly tight, golden fluorescent cut when crushed.
5284-5288	Sandstone: medium grained, red, fair permeability and porosity few pieces spotted fluorescence apparently when porosity developed sample carries water, few pieces of above tight sandstone.
5288-5300	Sandstone: as above, becoming tighter.
5300-5320	Shale: red, silty, hard, dense.
5320-5360	Sandstone: red, medium grained, good permeability and porosity no show except scattered pale, spotty fluorescence. top 10'.
5360-5390	Shale: red, hard, dense with stringers of above sandstone.
5390	Sample Top Kibbey Limestone
5390-5430	Limestone: light gray to buff, with trace of porosity in mostly dense crystal limestone.
5430-5450	Sandstone: fine grained, red, hard, trace of permeability and porosity, no show.
5450-5470	Shale: red, silty with trace of above sandstone and shale.
5470-5480	Limestone: dark gray, dense, trace of red shale.
5480	Sample Top Madison
5480-5520	Anhydrite: soft, white and dark gray, dense, also red shales.
5520-5530	Limestone: dark gray, dense, with above anhydrite and shales.
5530-5560	Limestone: light gray granulae with traces of soft white anhydrite.
5560-5570	Shale: black, marine, splintery, with above white anhydrite.

Sample Descriptions Continued

5570	Sample Top A-1 Zone
5570-5590	Limestone: dark gray, dense, traces of black micro-crystalline fair permeability and porosity, spotted fluorescence, poor cut.
5590-5610	Limestone: dark gray-brown, finely to micro-crystalline, fair permeability and porosity, fair, even fluorescence and cut.
5610-5620	Limestone: dark gray, fairly tight.
5620-5650	Limestone: dark gray-brown, finely crystalline, traces of oolite with even to spotted fluorescence, fair to poor cut, good permeability and porosity.
5650-5660	Limestone: dark gray, dense, no permeability and porosity, no show.
5660-5685	Limestone: dark gray, dense, traces of white anhydrite and black, splintery shale.
5685-5704	Salt section
5704-5740	Limestone: dark brown with traces of gray, earthy dolomite, last 20' increase in white, hard, anhydrite.
5743	Sample Top B-1 Zone
5740-5750	Limestone: dark gray-brown, finely crystalline, fairly tight, fair fluorescence and cut.
5750-5760	Anhydrite: dark gray, dense.
5759	Sample Top B-2 Zone
5760-5780	Limestone: dark gray-brown finely crystalline with good permeability and porosity, spotted, scattered fluorescence, poor milky cut.
5781	Sample Top B-3 Zone
5780-5790	Dolomite: gray-brown, earthy, widely scattered fluorescence poor to no cut, fair porosity and permeability.
5790-5797	Anhydrite: dark gray, dense.
5797-5817	Core No. 1 (B-4 Zone)
5817-5830	Limestone: gray to black, hard, dense with light gray dolomite traces of red shale.
5830-5850	Limestone: as above with hard, gray anhydrite.

Sample Description Continued

5850-5880	Limestone: dark gray to black, dense with black marine shale, also trace of white anhydrite.
5880-5908	Core No. 2 (C-Zone)
5908-5920	Limestone: dark brown, earthy, poor permeability and porosity, no fluorescence, or cut.
5920-5925	Limestone: dark gray, dense, trace of above earthy limestone.

EAST POPLAR UNIT WELL NO. 100

CORE DESCRIPTIONS

Core No. 1 B-4 5797-5817' Cut 20', Rec. 18.5'
C.T. 10, 12, 20, 34, 25, 28, 41, 50, 25, 30, 65, 65, 55, 30, 25, 25, 20, 22, 23, 22,

5 1/2' Anhydrite: dark gray, mottled, dense.

8' Limestone: dark gray, finely crystalline, poor permeability and porosity, bottom 7' open vertical fracture, oil odor, stain and fluorescence on fracture planes, no matrix show.

B-4 5' Dolomite: gray, earthy with slight odor, no fluorescence but poor milky cut, bottom 2' concave fracturing. Anhydrite inclusion throughout unit.

Core No. 2 C-Zone 5880-5908' Cut 28', Rec. 26'.

C. T. 19, 15, 26, 20, 23, 25, 33, 41, 22, 20, 21, 29, 19, 24, 29, 31, 37, 50, 50, 52, 40, 40, 50, 50, 95, 90, 75

6' Limestone: dark gray, dense, no permeability and porosity no show, 3' from top of unit to base of unit open vertical fracture, spotted stain, poor to no cut.

C-1 5' Limestone: dark gray to black with trace of permeability and porosity, no show.

7' Limestone: dark gray, dense, no permeability and porosity no show.

C-2 6' Limestone: as above with open vertical fracturing, spotted stain on fracture plane, no matrix show.

C-3 2' Limestone: dark brown, earthy, tight, poor permeability and porosity, poor to no fluorescence, sulfur odor.

EAST POPLAR UNIT WELL NO. 100

CORE ANALYSIS REPORTS

Sample No.	Representative Midpoint of Feet of Sample Footage	Permeability Radial	Permeability Vertical	Effective Porosity Per Cent	Density Bulk	Density Matrix	Saturation % of Pore Space Resid. Oil	Saturation % of Pore Space Water
	Core No. 1 5797-5817' Above "B-4" Zone							
1	5803-04	2.38	0.06	0.9	2.78	2.80	0	89.9
2	5804-05	0.03	U.T.	3.5	2.64	2.74	0	54.4
3	5805-06	0.31	U.T.	1.9	2.67	2.73	Trace	45.2
4	5806-07	0.04	U.T.	0.5	2.66	2.67	20.3	55.0
5	5807-08	0.02	U.T.	3.4	2.60	2.69	Trace	21.8
6	5808-09	0.02	U.T.	2.5	2.68	2.75	0	20.0
7	5809-10	0.02	U.T.	2.7	2.68	2.75	0	7.1
	"B-4" Zone							
8	5810.5-11	0.13	-0.01	2.7	2.53	2.60	3.4	93.5
9	5811-12	0.86	0.04	3.1	2.60	2.68	2.1	95.8
10	5812-13	0.20	0.03	1.7	2.65	2.70	Trace	94.3
11	5813-14	0.37	0.06	3.7	2.66	2.76	Trace	96.1
12	5814-15	0.55	0.05	3.7	2.70	2.81	Trace	93.9
13	5815-15.5	1.39	0.03	2.6	2.77	2.85	0	96.5

U.T. - Unfit for test

EAST POPLAR UNIT NO. 100

4/26/96 The rods parted on this well and the tubing slipped down. When it did one segment of the wellhead slips fell down the hole.

WORKOVER HISTORY NO. 1

January 28, 1959

Lease and Well Number: East Poplar Unit Well No. WE 160

Field: East Poplar County: Roosevelt State: Montana

Well Location: SW SE Section 11, T28N, R51E

Status Prior to Present Job:

Date Completed: June 23, 1957 Date of Last Workover: None T.D.: 5926'

PBTD: 5865' Producing Zone: B Zone of Madison Formation

Perforations: 5805'-5817' Cumulative Production: through December, 1958 was 26,916 BO and 252,017 BW Latest Test: November 1, 1958 -- 624 BFPD, 92% water (50 BOPD, 574 BWPD)

Justification for Workover: To increase oil production and lower water cut.

Summary of Workover:

1-15-59 PBTD 5865' - Rigged up pulling unit to recomplete in the B Zone and DR plug B Zone. Pulled rods and tubing. Ran gun in hole, unable to perforate, odometer would not work.

1-16-59 PBTD 5865' - Perforated B Zone (5742-5750') with Wireline Inc. Dyna jet casing gun, 4 h.p.f. Ran tubing with 2 sets Baker seal unities, perforation nipple and blank joint with bull plug. Stung into Baker Model "D" production packer with top seal unities and checked for communication between B and B Zone perforations. No communication. Picked tubing up until lower seal assembly was in Model "D" production packer. Spot 1000 gallons Howco regular acid down tubing and up casing above B perforations (5742-5750'). Lower tubing until upper seal assemblys were in Modal "D" packer. Acidized B Zone down casing. Displaced first 6 barrels acid at rate of 1/4 BPM at 2000#, next 8 barrels at the rate of 1/2 BPM at 2200# and last 10 barrels at the rate of 3/4 BPM at 2300#. 8 minute bleed down pressure was 2100#. (Note: B Zone and B Zone did not communicate.) Swabbed until spent acid was recovered. Shut in on account of darkness.

1-17-59 PBTD 5865' - After shut in overnight, well flowed 1/2" stream. Killed with 100 barrels salt water. Made trip with tubing. Laid down Baker double seal assembly. Ran Baker DR plug and set plug in Model "D" packer at 5800'.

Summary of Workover continued

1-18-59 PBTD 5865' - Pumping off load water, will test today.

1-19-59 PBTD 5865' - On 3 hour test, pumped at the rate of 217 BFPD, 4% water (208 BOPD, 9 BWPD), Chlorides 106,000 PPM.

1-20-59 PBTD 5865' - Down due to power failure. No test, water cut was 4%.

1-21-59 PBTD 5865' - No test, power off yesterday.

1-22-59 PBTD 5865' - On 4 hour test, pumped at the rate of 170 BFPD, 4% water (164 BOPD, 6 BWPD).

1-23-59 PBTD 5865' - On 24 hour test, pumped at the rate of 140 BFPD, 3% water (135 BOPD, 6 BWPD).

1-24-59 PBTD 5865' - On 24 hour test, pumped at the rate of 135 BFPD, 4% water (130 BOPD, 5 BWPD). This is the B' Zone initial potential. To drop from report.

Recap of Workover:

1. New Perforations: 5742-5750'
2. Final PBTD: 5865'
3. Workover Potential: Pumping 135 BFPD, 4% water (130 BOPD, 5 BWPD)
4. Geologic Name of New Producing Zone: B Zone of Madison Formation

Results of Workover: Oil production increased from 50 BPD to 130 BPD and water production decreased from 574 BPD to 5 BPD. Workover Successful.

Tubing Record

Below RKB	8.50'
Top joint	30.63'
126 jts. 2-7/8" tubing	3883.19'
Seating nipple (2-1/4 + .45)	1.25'
2 jts. 2-7/8" tubing	61.06'
2-7/8" x 2-3/8" swage and collar	.80'
57 jts. 2-3/8" tubing	1784.61'
Baker DR setting tool	1.25'
Bottom of tubing	5771.49'

DR plug with 3' fishing neck, 2-3/8" tubing collar, latched in Model "D" packer at 5800'.

Rod Record:

46 — 7/8" scraper rods 1150'
110 — 3/4" plain rods 2750'
156 3900

Pump Data: Oil Well Pump No. 48, 2-1/2" x 2" x 16' Insert.

156
25
780
312
3900

WORKOVER HISTORY NO. 2

July 1, 1963

Well Lease and Number: East Poplar Unit Well No. 100

Field: East Poplar County: Roosevelt State: Montana

Well Location: SW SE Section 11, T28N, R51E

STATUS PRIOR TO PRESENT JOB:

Date Completed: June 23, 1957 Date of Last Workover: January 28, 1959

T.D. : 5926' PBTD: 5865' Producing Zone: B-1 Zone of Madison Formation Perforations: 5742' - 5750'

Cumulative Production of Present Zone: 142,902 BO, 29,612 BW

Latest Test: June 3, 1963 - Pumping 98 BFPD, 31% water, (67 BOPD, 30 BWPD)

JUSTIFICATION FOR WORKOVER: To locate and repair 5½" casing leak.

SUMMARY OF WORKOVER:

7-01-63 PBTD 5865' - Moved in pulling unit. Pulled rods and tubing out of hole. Shut down overnight.

7-02-63 PBTD 5865' - Ran HOWCO Bridge Plug on bottom of Baker Model "R" Packer. Set B.P. at 5725', set packer at 5710'. Tested B.P. to 2500#, held ok. Reset Packer at 5676', tested casing through salt section to 2500#, held ok. Pin pointed hole in 5½" casing at 3937'. Base of the swift formation tested casing above and below hole with 2500#, held. Recovered bridge plug, pulled out of hole. Ran Baker 5½" casing scraper with HOWCO G.R. on 2-3/8" tubing to 3950. Scraped casing from 3927' to 3947'. Pulled out of hole. Ran HOWCO stress tool with 10' of casing patch. Set patch from 3932' to 3942'. Pulled 1 std. out of hole. Shut down overnight.

7-03-63 PBTD 5865' - Pulled out of hole laying down 2-3/8" tubing. Ran production string of tubing and rods in hole with 2" x 1½" x 16' insert pump. Left well shut down until 10 pm 7-3-63 W.O. casing patch to set. Well pumping.

SUMMARY OF WORKOVER CONTINUED:

7-04-63 PBTD 5865' - Pumping, no test.

7-05-63 PBTD 5865' - Pumping, no test. 100% water.

7-06-63 PBTD 5865' - Pumping, no test. 100% water.

7-07-63 PBTD 5865' - Pumping 236 BFPD, 100% water.

7-08-63 PBTD 5865' - Pumping, 100% water. Chlorides 38,000 PPM.

7-09-63 PBTD 5865' - Pressure test casing patch to determine if leaking. Pumping at the rate of 414 BFPD, 100% water. Chlorides 49,000 PPM.

7-10-63 PBTD 5865' - Pressure test for casing leak. Moved in pulling unit, pulled rods and tubing. Shut down due to storm.

7-11-63 PBTD 5865' - Ran Baker Model "R" Packer, tagged top of casing patch at 3932', Set packer, pressured casing above casing patch to 2000#, held ok. Released packer, went inside casing patch 2', packer would not go. Attempted to spud through tight place, would not go. Pulled out of hole. Packer indicated casing patch collasped. Ran HOWCO Model H.H. Packer 4.44 O.D. Unable to work packer through tight place. Set packer at 3930'. Pumped 40 plugging balls down tubing to attempt to plug off B-1 perf. 5742' - 5750'. Pulled out of hole. Shut down overnight.

7-12-63 PBTD 5865' - Ran 4-5/8" O.D. casing swedge with bumper jars, oil jars and safety jt. Swedged on collasped place in casing patch 4 hours, unable to swedge out same. Pulled out of hole. Ran 4½" O.D. swedge. Swedged through collasped place. Pulled two stds. above casing patch. Shut down overnight.

7-13-63 PBTD 5865' - Pulled out of hole, ran 4-5/8" O.D. swedge, would not go. Pulled out of hole, ran 4-9/16" O.D. swedge. Swedged through collasped place. Pulled above casing patch. Shut down overnight.

7-14-63 PBTD 5865' - Pulled out of hole. Ran HOWCO Bridge Plug with R.T.T.S. Packer 4.44 O.D. dressed for 23# casing. Went through collaspe place with no drag. Set B.P. at 5000'. Set packer at 4980' to test B.P., packer would not hold. Recovered B.P., pulled out of hole. Ran HOWCO 4.55 O.D. Bridge Plug and packer dressed for 13# to 20# 5½" casing. Worked Bridge Plug through casing patch, R.T.T.S. Packer would not go. Pulled out of hole. Shut down overnight.

SUMMARY OF WORKOVER CONTINUED:

7-15-63 PBTD 5865' - Ran HOWCO 4.45 O.D. Bridge Plug and R.T.T.S. Packer dressed for 13# to 20# 5½" casing. Set B.P. at 5000'. Set R.T.T.S. Packer at 4985', packer would not hold. Reset at 4800', would not hold. Pulled out of hole, ran Baker Model "R" Packer dressed for 20# 5½" casing. Set at 3960'. Tested casing and B.P. to 2500#, held ok. Pulled out of hole, ran HOWCO 4.55 O.D. R.T.T.S. Packer with 24' of tail pipe. Set packer at 3910'. Pumped in casing leak at rate of 1 BPM at 2800# with salt water. Released packer, reversed circ. S.W. out of hole with crude oil at 3954' holding 1000# back pressure. D.O.C. squeezed with 75 sacks cement mixed in crude oil. Spotted 45 sacks down tubing. Set packer at 3910'. Finished mixing cement, displaced 60 sacks in formation, started staging 10 to 30 minute stages. Maximum pressure-1600#. Shut down, bled to 600#. Would not squeeze. Released packer, reversed out, washed down to 3954'. Reversed 1 bbl. of cement slurry to pit. Reset packer 3910'. Shut in with 700# pressure.

7-16-63 PBTD 5865' - Pressured up on squeeze job to 900#, would not hold. Reversed oil out of hole with salt water. Pulled R.T.T.S. Packer out of hole. Ran Baker Model "R" Packer set at 3950'. Tested Bridge Plug to 2500#, held ok. Pulled out of hole. Ran HOWCO R.T.T.S. Packer with 24' of tail pipe. Displaced salt water with crude oil at 3954'. Set packer at 3910', broke formation at rate of 1 BPM at 2800#. Released packer, D.O.C. squeezed with 75 sacks of cement, mixed 50 sacks, set packer at 3910'. Finished mixing cement, pressured casing to 2000#, displaced 60 sacks in formation at 2900#. Shut down 10 minutes, bled to 2700#, press. to 3500#, broke back to 1800#. Staged 30 minutes, press. to 3000#, bled to 1700#. Staged 20 minutes, press. to 3000#, bled to 2200#. Staged 30 minutes, press. to 3000#, held. Released to pit, would not hold. Repress. to 3000#, bled to 1750#. Staged 30 minutes, press. to 3250#, held ok. Equalized tubing and casing to 1200#. Reversed out under press. 1.5 bbls. of cement slurry to pit. Reset packer at 3910', press. to 2000#, would not hold. Tubing press. 1200#, bled casing to 500#. Shut in overnight. Tested casing with 3500#. Held good.

7-17-63 PBTD 5865' - Released packer, tagged top of casing patch, displaced oil with salt water. Pulled R.T.T.S. Packer out of hole. Ran retreiving head for B.P. Found cement stringers 4742' to 4755'. Washed and reversed circ. to top of Bridge Plug at 4900'. Tubing plugged. Made trip, unplugged tubing. Went in hole reversed circ. hole clean. Recovered B.P. Pulled above casing patch. Shut down overnight.

SUMMARY OF WORKOVER CONTINUED:

7-18-63 PBTD 5865' - Pumping. Finished pulling bridge plug out of hole laying down workover string of tubing. Ran tubing and rods with 2" x 1½" x 16' insert pump. Started well pumping at 4 PM.

7-19-63 PBTD 5865' - Note: Maximum I.D. of 5½" casing at bad place is 4.5". On 4 hour test, pumped at the rate of 98 BFPD, 97% water, (3 BOPD, 95 BWPD). Chlorides 58,000 PPM.

7-20-63 PBTD 5865' - Pumping. On 24 hour test, pumped 98 BFPD, 72% water, (28 BOPD, 70 BWPD). Chlorides 94,000 PPM.

7-21-63 PBTD 5865' - Pumping. On 24 hour test, pumped 79 BFPD, 64% water, (28 BOPD, 51 BWPD). Chlorides-99,000 PPM.

7-22-63 PBTD 5865' - Pumping. Changed out pump and lower pumping depth 150'. No test.

7-23-63 PBTD 5865' - Pumping. On 4 hour test, pumped at the rate of 73 BFPD, 22% water, (57 BOPD, 16 BWPD). Chlorides-107,000 PPM.

7-24-63 PBTD 5865' - Pumping. On 24 hour test, pumped 79 BFPD, 20% water, (63 BOPD, 16 BWPD). This is W.O. test. To drop from report.

RECAP OF WORKOVER:

1. Final Perforations: 5742' - 5750' (unchanged)

2. Final PBTD: 5865'

3. Test after workover: 79 BFPD, 20% water, (63 BOPD, 16 BWPD)

4. Geologic Name of Producing Zone: B-1 Zone of Madison Formation

RESULTS OF WORKOVER:

Repaired 5½" casing leak at 3937'. Pumping 79 BFPD, 20% water, (63 BOPD, 16 BWPD).

TUBING RECORD:

RKB		8.50
135	Jts. 2-7/8" Tubing	4165.23
51	Jts. 2-3/8" Tubing	1525.50
1	Seating Nipple	1.09
1	Perf. Nipple	3.08
1	Jt. 2-3/8" Tubing	32.20
	BOTTOM OF TUBING	5735.60

5699

ROD RECORD:

37	7/8" Scrapers	925.00
76	7/8" Plain	1925.00
112	3/4" Plain	2800.00
3	7/8" Subs. 8',6',6',	20.00
		5670.00'

PUMP DATA:

2" x 1½" x 16' Oil Well pump with top cup hold down.

CHEMICAL & GEOLOGICAL LABORATORIES

CHEMISTS CORE ANALYSTS ENGINEERS

File #100

MURPHY CORPORATION

100 EAST POPLAR UNIT

SW SE 11-28N-51E

CHARLES

EAST POPLAR, MONTANA

CORE ANALYSIS

CHEMICAL & GEOLOGICAL LABORATORIES of MONTANA

113 WEST BELL P. O. BOX 537
GLENDIVE, MONTANA

FULL DIAMETER CORE STUDY

Operator Murphy Corporation Field East Poplar Formation B-4 Zone (Charles)

Well No. #100 East Poplar Unit Location SW SE 11-28N-51E Depths 5797-5817

Elevation 2215 KB Date July 18, 1957 Lab. No. 800

SAMPLE NO.	REPRESENTATIVE OF FEET	MIDPOINT OF SAMPLE	FOOTAGE	PERMEABILITY RADIAL	PERMEABILITY VERTICAL	EFFECTIVE POROSITY %	DENSITY WET	DENSITY DRY	SATURATION % OF PORE SPACE RESIDUAL OIL	SATURATION % OF PORE SPACE WATER	DESCRIPTION
	Core #1 5797-5817' Recovered 18½'										
	Above B-4 Zone										
1	5803-04			2.38	0.06	0.9	2.78	2.80	0	89.9	Ls, Hi Frac
2	5804-05			0.03	U.T.	3.5	2.64	2.74	0	54.4	Ls, Hi Frac
3	5805-06			0.31	U.T.	1.9	2.67	2.73	Tr.	45.2	Ls, Hi Frac
4	5806-07			0.04	U.T.	0.5	2.66	2.67	20.3	55.0	Ls, Hi Frac
5	5807-08			0.02	U.T.	3.4	2.60	2.69	Tr.	21.8	Ls, Hi Frac
6	5808-09			0.02	U.T.	2.5	2.68	2.75	0	20.0	Ls, Hi Frac
7	5809-10			0.02	U.T.	2.7	2.68	2.75	0	7.1	Ls, Hi Frac
	B-4 Zone										
8	5810.5-11			0.13	-0.01	2.7	2.53	2.60	3.4	93.5	Dol
9	5811-12			0.86	0.04	3.1	2.60	2.68	2.1	95.8	Dol
10	5812-13			0.20	0.03	1.7	2.65	2.70	Tr.	94.3	Dol
11	5813-14			0.37	0.06	3.7	2.66	2.76	Tr.	96.1	Dol
12	5814-15			0.55	0.05	3.7	2.70	2.81	Tr.	93.9	Dol
13	5815-15.5			1.39	0.03	2.6	2.77	2.85	0	96.5	Dol

LEGEND:

Hi Frac-Highly Fractured
U.T.-Unfit for test
Dol-Dolomite
Ls-Limestone

Location: SW SW Sec. 11, T28N, R51E
Spacing - 160 acres
Elevation: 2203' Gr. = 2215' K.B.
Spudded: 6-29-57
Completed: 7-23-57
T.D.: 5925' Drlr = 5926' Schl.
Prod. Zones: "B-4" (5805-17')
"B-1" (5742-50')

Schlumberger Tops

	Depth	Datum	Thickness
Greenhorn	2444	- 229	
Muddy Sd	3003	- 788	
Dakota Silt	3201	- 986	
Piper Ls	4425	-2210	
Amsden	4805	-2590	
Heath	*4930	-2715	
Otter	5100	-2885	
Kibbey Sd	*5236	-3021	
Kibbey Ls	5390	-3175	
Madison	5478	-3263	
A-1	**5570	-3355	3'
A-2	**5578	-3363	2'
A-3	*5588	-3373	9'
A-4	5597	-3382	26'
B-1	**5743	-3528	9'
B-2	5759	-3544	15'
B-3	*5781	-3566	7'
B-4	5814	-3599	5'
B-5	5850	-3635	?
C-1	5887	-3672	?
C-3	5907	-3692	12'

**Probable prod. zones (From DST, structural position, etc.)
*Shows

Drill Pipe Corrections (Made)
3025' Driller = 3020' SLM (-5')
5666' Driller = 5657' SLM (-9')
5803' Driller = 5797' SLM (-6')

Coring Intervals:
Core #1 5797-5817', Rec. 18.5', B-4 Zone
Core #2 5880-5908', Rec. 26', C1, 2 & 3 Zones

Drill Stem Tests:
DST #1 5013-5025', Heath Sandstone. Ran DST #1 w/ Halliburton single, full hole pkr, 5/8" bot ch, NWC. Tool opn 38 min, SI 20 min. Tool opnd w/ strong blo. Salt wtr to surf in 28 min at rate of 3/4 BPM w/ rainbow of oil. IBHFP 450, FBHFP 2180, BHSIP 2470, Hydro 2720. Wt. of salt wtr 8.8#. per gal.
DST #2 5747-5758', "B-1". Ran DST #2 w/ Halliburton, single pkr full hole, 5/8" bot ch, NWC. Tool opn 2 hrs, SI 30 min. Tool opnd w/ good blo & remained same thruout test. Gas to surf while closing tool (2 hrs). Rec. 180' cln oil, 90' muddy oil & 90' salty sulf wtr. IBHFP 42, FBHFP 205, BHSIP 2030 (still building), Hydro 3320.
DST #3 5763-5778', "B-2". Ran DST #3 w/ Halliburton, single, full hole pkr, 5/8" bot ch, NWC. Tool opn 2 hrs, SI 30 min. Tool opnd w/ strong blo, cont'd thruout test. Gas to surf ? hrs. Rec. 630' mud-cut oil, 360' wtr-cut oil & 2570' salty sulf wtr. IBHFP 83, FBHFP 1828, BHSIP 2472, Hydro 3320.
DST #4 5780-5803', "B-3". Ran DST #4 w/ Halliburton, single full hole pkr, NWC, 5/8" bot ch. Tool opnd w/ weak blo for 5 min & stopped. Tool opn 2 hrs, SI 30 min. Rec. 40' muddy wtr. IBHFP 10, FBHFP 23, BHSIP 865, Hydro 3345.
DST #5 5801.5-5817', "B-4". Ran DST #5 w/ Halliburton single pkr, 5/8" bot ch, NWC. Tool opn 2 hrs, SI 30 min. Tool opnd w/ weak blo, inc to fair blo in 15 min, dead in 30 min. Rec. 90' gas-cut mud w/ rainbow of oil. IBHFP 20, FBHFP 60, BHSIP 2860, Hydro 3380.

History Subsequent to Completion:
1-24-59: DR plugged "B-4" Zone (5805-17'), perforated "B-1" Zone (5742-50').

STIMULATION TREATMENT REPORT

DWL-494-J PRINTED IN U.S.A.

DOWELL
A DIVISION OF THE DOW CHEMICAL COMPANY

DATE: 6-15-73

WELL NAME AND NUMBER: E-P-U #100	LOCATION: East Poplar	CUSTOMER REPRESENTATIVE: MR. Logering	TREATMENT NUMBER: 15-05-7378
FIELD: East Poplar	FORMATION:	JOB DOWN: TUBING A ☒ CASING B ☐ ANNULUS C ☐	ALLOWABLE PRESSURE: TBG: 2000 CSG: 500
COUNTY: Roosevelt	STATE: Montana	TYPE OF WELL: OIL A ☒ GAS B ☐ WATER C ☐ INJ. D ☐	
TYPE OF SERVICE: acidize		AGE OF WELL: NEW WELL A ☐ REWORK B ☒	TOTAL DEPTH: CIRC. BHT:
CUST. NAME: Murphy Oil Corp.		CASING SIZE: CASING DEPTH:	TUBING SIZE: 2 3/8 TUBING DEPTH: 5717
ADDRESS: Murphy Bldg.		LINER SIZE: LINER DEPTH:	PACKER TYPE: Baker PACKER DEPTH: 5717
CITY, STATE & ZIP CODE: El Dorado Arkansas 71730		OPEN HOLE: CSG.OR ANRL.VOL.: 101	TBG VOLUME: 22.3 STATIC BHT:
REMARKS:			

PERFORATED INTERVALS

DEPTH	NO. OF HOLES	DEPTH	NO. OF HOLES	DEPTH	NO. OF HOLES
5742-48					

FOR CONVERSION PURPOSES 24 BBLS EQUALS 1000 GALLONS

ARRIVED ON LOCATION: 9:00 AM

TIME	INJECTION RATE	INJECTION BBLS IN	PRESSURE CSG.	PRESSURE TBG.	SERVICE LOG
					Rig Pump to tubing - Safety Meeting
12:05	3	59	200	-	fill Casing w/59 BBl water & pressure to 200psi
					Est. Rate @ 1/4 Bpm @ 1000 psi
12:25					Release PKR & spot w/22½ BBl 28% acid
12:45	½	22½	200		22½ BBl Pumped set PKR
1:30	½	48	250		48 BBl Pumped start 23 BBl Salt water Flush
2:20	½	71	300		71 BBl Pumped start 50BBl Salt water overflush
3:40	½	121	300		121 BBl Pumped Shut down Job Complete
4:15					Reverse Hole w/ 124 BBl Salt water
5:20	2	124		500	124 BBl Pumped Shut down
					MAX Rate ½ MAX Psi 1400
					Min " ¼ Min " 900
					AVG " ½ AVG " 1000
					Total load 133

TIME LEFT LOCATION: 6:00 pm	AVG. LIQUID INJ. RATE:	ADDNL RATE (SOLIDS INC.): ½	TOTAL FLUID PUMPED: OIL ~~OIL~~ WATER 133	
MAX. PRESSURE: 1400	AVG. PRESSURE: 1000	FINAL PUMP IN PRESSURE: 1400	SHUT IN PRESSURE: IMMEDIATE 1400	15 MINUTES 900
DOWELL LOCATION: Williston NO DAK	DOWELL ENGINEER: D Dobie			

PROPS AND LIQUIDS INJECTED

TYPE	SIZE OR PURPOSE	AMOUNT
28%	HCL Acid	2000 gal
A-170	Inhibitor	8 gal
W-35	DeEmulsifier	8 gal
L-41	Iron Agent	80 #

CALL BACK | DATE | CUSTOMER REP. CONTACTED | CUSTOMER CONSIDERED SERVICE: ☐ SATISFACTORY ☐ UNSATISFACTORY ☐ UNKNOWN | PROD. BEFORE TREATMENT: ☐ TEST ☐ ALLOWABLE | PROD. AFTER TREATMENT: DAYS ☐ TEST ☐ ALLOWABLE

EAST POPLAR UNIT WELL NO. 100

SURFACE EQUIPMENT RECORD

1. Well Head Equipment: 1 - Cameron 10" series 600 x 9 5/8", 8rd. thd., type W. F. casing head with 2 - 2" outlets, 1 - 2" Cameron L. P. valve 2000# W. P.

   1 - 10" x 5 1/2" Cameron type C. A. automatic casing hanger complete.

   1 - Larkin 600 series, 2000# W. P., Type R tubing head.

2. Lifting Equipment: 1 - T17C1 D160Z American pumping unit complete with frame extension and belt guard for electric motor, and ground lubrication system - Serial No. D1601072.

   1 - General Electric 25 H.P., 3 phase, 60 cycle, 220/440 volt, 1165 R.P.M. electric motor - Serial No. VL8156225.

   1 - General Electric - CR - 7008E, Size No. 3 Motor Control.

3. Flowline: 1030' of 3", 6.63#, R-3, P. E. Line Pipe.

EAST POPLAR UNIT WELL NO. 100

SUB-SURFACE EQUIPMENT RECORD

1. Packer: Baker Modal "D" Production Packer.

2. Depth Installed: 5800'

3. Rods: 80 - 3/4" x 25' plain rods
   38 - 7/8" x 25' scraper rods

4. Pump: 2 1/2" x 2" x 1 1/2" x 12' x 24' Axelson Volumax Insert Pump with 3 cup top hold down.

PRODUCTION &
INJECTION DATA